M. L. DUNLAP (Rural).
ELMER BALDWIN.
C. C. WALMSLEY.

LEWIS ELSWORTH.
SMILEY SHEPHERD.
TYLER McWHORTER.

Pioneers in Illinois Horticulture.

TRANSACTIONS

OF THE

ILLINOIS STATE HORTICULTURAL SOCIETY

FOR THE YEAR 1897.

BEING THE PROCEEDINGS OF THE

FORTY-SECOND ANNUAL MEETING

HELD AT SPRINGFIELD, DECEMBER 28, 29 AND 30, 1897.

ALSO PROCEEDINGS OF THE

NORTHERN, CENTRAL AND SOUTHERN DISTRICT SOCIETIES

AND A NUMBER OF COUNTY SOCIETIES

FOR THE YEAR 1897.

NEW SERIES--VOL. XXXI.

EDITED BY THE SECRETARY, HENRY M. DUNLAP, SAVOY, ILL.

PUBLISHED BY THE SOCIETY.

SPRINGFIELD, ILL.:
THE H. W. ROKKER PRINTING HOUSE.
1897.

LIFE MEMBERSHIP.

The State Horticultural Society has, by an amendment to the constitution, reduced the amount of the life membership fee from twenty dollars to five dollars.

By becoming a life member you will receive about twelve of the back reports of the Society, commencing with the year 1886.

In addition to the back reports of the Society you will, by becoming a life member, receive all the future reports and publications of the Society during your lifetime.

Every person interested in horticulture should become a life member of the State Horticultural Society: by so doing you benefit yourself and strengthen the Society.

Send your name to the Secretary with enclosure of five dollars and the reports will be forwarded to you by freight or express, as desired.

In sending in your remittance to the Secretary please state your present business occupation and postoffice address, and advise the Secretary of any change in address.

ANNUAL MEMBERSHIP.

One dollar will secure an annual membership and a copy of the 1897 report, free by mail. Those attending the annual meetings receive two copies.

FARMERS' COUNTY INSTITUTES.

The attention of the officers of county institutes is called to the fact that the Secretary will send, on receipt of application from the officers of such institutes, fifty copies of this report for free distribution among the members thereof. The only expense will be the freight.

Copies of the report will be furnished, on application, to the public school and other libraries of the state, and to local horticultural societies. Address:

L. R. BRYANT, Secretary,
Princeton, Illinois.

To Hon. John R. Tanner, Governor of Illinois:

SIR—I have the honor to transmit to your excellency the thirty-first annual report of the Illinois State Horticultural Society, and I trust an inspection of its contents will satisfy you that the funds appropriated by the General Assembly for the advancement of horticulture within the state have been wisely expended.

The experiment stations of the Society are well under way, and matters of importance are already being reported upon. Many new and seedling varieties are being experimented with, and results from these stations will save the fruit-growers of the state many thousands of dollars and years of valuable time.

Much valuable information regarding the San Jose scale and other insects will be found in this volume.

Respectfully submitted,

HENRY M. DUNLAP,

Savoy, Ill. Secretary.

OFFICERS FOR 1898.

PRESIDENT.....HENRY M. DUNLAP, Savoy.
VICE-PRESIDENT.....H. A. ALDRICH, Neoga.
SECRETARY.....L. R. BRYANT, Princeton.
TREASURER.....J. W. STANTON, Richview.

EXECUTIVE BOARD.

HENRY M. DUNLAP....PRESIDENT STATE SOCIETY.....Savoy.
L. R. BRYANT.....SECRETARY STATE SOCIETY.....Princeton.
J. L. HARTWELL.....PRESIDENT NORTHERN SOCIETY.....Dixon.
H. R. COTTA.....VICE-PRESIDENT NORTHERN SOCIETY....Freeport.
G. J. FOSTER.....PRESIDENT CENTRAL SOCIETY.....Normal.
H. L. DOAN.....VICE-PRESIDENT CENTRAL SOCIETY.....Jacksonville.
J. WEBSTER.....PRESIDENT SOUTHERN SOCIETY.....Centralia.
J. W. STANTON.....VICE-PRESIDENT SOUTHERN SOCIETY....Richview.

HORTICULTURAL EXPERIMENT STATIONS.

Place Where Located.		Superintendent of Station
NORTHERN DISTRICT—1.	Princeton	ARTHUR BRYANT.
2.	Nursery	J. V. COTTA.
3.	Marengo	C. W. PRESCOTT.
CENTRAL DISTRICT —4.	Savoy	H. M. DUNLAP.
5.	Warsaw	M. S. HAMMOND.
SOUTHERN DISTRICT—7.	Centralia	JABEZ WEBSTER.
8.	Alton	J. S. BROWNE.
9.	Cobden	T. E. GOODRICH.
10.	Odin	J. G. VAUGHN.
11.	Olney	C. S. MACE.

Some of the stations are for testing all kinds of fruit, while others are limited in their experiments. Parties having valuable varieties of fruit which they want to have tested should communicate with one of the directors who have charge of the work of the stations.

DIRECTORS OF STATIONS.

Northern.....Arthur Bryant.....Princeton.
Central.....H. Augustine.....Normal.
Southern.....E. A. Riehl.....Alton.

CONSTITUTION AND BY-LAWS.

As Amended at the Annual Meetings, 1874 and 1895.

CONSTITUTION.

I. This Association shall be known as the Illinois State Horticultural Society.

II. Its object shall be the advancement of hhe Science of Pomology and the Art of Horticulture.

III. Its members shall consist of Annual Members, paying an annual fee of one dollar; of Life Members, paying a fee of five dollars at one time, and of Honorary Members, who shall only be persons of distinguished merit in Horticulture or kindred sciences, who may, by vote, be invited to participate in the privileges of the Society. The wives of members shall be members without fee.

IV. Its officers shall consist of a president, one Vice President, Secretary and Treasurer, who shall be elected at the annual meeting and serve until their successors are chosen; also an Executive Board, as hereinafter provided.

V. The affairs of the Society shall be managed by an Executive Board, to consist of the President and Secretary of the Society, and President and Vice President from each of the three District Horticultural Societies of the State.

VI. The Society shall hold annual meetings and publish its transactions annually, *provided* there are sufficient funds in the treasury to defray the expenses of publication.

VII. The Constitution may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at all meetings of the Society, call the meetings of the Executive Board, and, under its direction, have a general superintendence of the affairs of the Society and direction and expenditures of money. He shall deliver an annual address upon some subject connected with Horticulture, and shall appoint all special committees, unless otherwise ordered.

II. The Vice President shall preside at the meetings in the absence of the President.

III. The Secretary shall, upon the direction of the Executive Board, conduct the correspondence of the Society, have charge of its books, papers and reports, and prepare its reports for publication, and shall receive for his necessary expenses for postage, stationery, printing, expressage, office rent and salary such sums as the Executive Board may vote therefor.

IV. The Treasurer shall receive and keep an accurate account of all moneys belonging to the Society and disburse the same upon the written orders of the President, which he shall retain and file as vouchers; he shall make an annual report to the Society of the receipts and disbursements, which, with the vouchers, shall be referred to a special auditing committee appointed at the annual meeting. Before entering upon his duties he shall give bond to the Society in the sum of ten thousand dollars for the faithful performance of his duties, such bond to be approved by the Executive Board.

V. The Executive Board shall perform all the duties required of them by Section 4 of the "Act Reorganizing the State Horticultural Society," approved March 24, 1874. They may appoint such standing and other committees as they may deem advisable.

VI. These By-Laws may be altered at any regular meeting by a two-thirds vote of the members present.

An Act to Reorganize the State Horticultural Society.

Be it enacted by the People of the State of Illinois, represented in the General Assembly:

Section 1. That the organization heretofore chartered and aided by appropriations, under the name of the Illinois State Horticultural Society, is hereby made and declared a public corporation of the State.

Sec. 2. The Illinois State Horticultural Society shall embrace, as hereinafter provided, three Horticultural Societies, to be organized in the three horticultural districts of the State, which shall be known as the Horticultural Society of Northern Illinois, now operating in the counties of Bureau, Boone, Cook, Carroll, Du Page, De Kalb, Henry, Grundy, Jo Daviess, Kane, Kendall, Kankakee, Lake, Lee, La Salle, McHenry, Ogle, Putnam, Rock Island, Stephenson, Whiteside, Winnebago and Will (23); the Horticultural Society of Central Illinois, operating in the counties of Adams, Brown, Cass, Champaign, Christian, Coles, De Witt, Douglas, Edgar, Fulton, Ford, Iroquois, Hancock, Henderson, Knox, Logan, Livingston, McLean, McDonough, Marshall, Mason, Mercer, Menard, Morgan, Macon, Moultrie, Peoria, Pike, Piatt, Sangamon, Shelby, Schuyler, Scott, Stark, Tazewell, Vermillion, Warren and Woodford (38); and the Horticultural Society of Southern Illinois, operating in the counties of Alexander, Bond, Clark, Clay, Crawford, Calhoun, Cumberland, Clinton, Edwards, Effingham, Fayette, Franklin, Green, Gallatin, Hamilton, Hardin, Jasper, Jefferson, Jersey, Jackson, Johnson, Lawrence, Madison, Macoupin, Marion, Monroe, Montgomery, Massac, Perry, Pope, Pulaski, Richland, Randolph, St. Clair, Saline, Union, Wayne, White, Washington, Williamson and Wabash (41).

Sec. 3. The affairs of the Illinois State Horticultural Society shall be managed by an Executive Board, to consist of the President and Secretary of said

Society, and the President and one Vice President from each of the three District Horticultural Societies; *provided*, that the eligible officers now elect of the Illinois State and District Horticultural Societies shall be the first members of the Executive Board created by this act, and shall hold their offices until their successors are elected, as hereinafter provided.

SEC. 4. The Executive Board of the Illinois State Horticultural Society shall have the sole care and disposal of all funds that may be apportioned (appropriated) by the State of Illinois to sustain the Illinois State Horticultural Society, and shall expend the same in such manner as in their judgment will best promote the interests of Horticulture and Aborculture in this State. They shall meet at Springfield on the second Tuesday after the first Monday in January, 1875, nnd biennially thereafter. They shall render to the Governor of the State a detailed statement of all funds received from the State, and all other sources, which statement shall also include all expenditures made by them, and the specific objects in detail for which said sums were expended. They shall make no appropriation without having funds in hand to meet the same, and if any debt is created the members of the Board shall be held severally and jointly liable for the payment of the same, and in no event shall the State of Illinois be held liable or responsible for any debt, obligation or contract made by the Illinois State Horticultural Society or its Executive Board.

SEC. 5. The Illinois State and the three District Horticultural Societies shall hold annual meetings, at which their officers for the ensuing year shall be elected. Within one month after the annual meeting of the District Societies they shall forward to the Secretary of the Executive Board a report of their transactions, including a list of officers elected at such meeting. The Executive Board shall publish annually, at the expense of said Society, a report of its transactions and such other papers as they may deem of value to Horticulture and Arborculture. Four members of the Executive Board shall constitute a quorum for the transaction of business.

SEC. 6. Members of the several District Societies shall be entitled to all the privileges of the members of the State Society, except that of voting for officers.

SEC. 7. By-laws and rules that do not conflict with the laws of this State may be passed and enforced by the several Societies herein mentioned.

Approved March 24, 1874.

---

*The society was first incorporated February 11, 1857—two months after its organization.

LIST OF MEMBERS.

HONORARY MEMBERS.

Morrell, R	Benton Harbor, Mich.	Pres. Michigan Hort. Society.
Colman, A. F	Corning, Ia	Delegate Iowa Hort. Society.
Nelson, A	West Lebanon, Mo.	Delegate Missouri Hort. Society.
Troop, Prof. J	Burdue, Ind	Delegate Indiana Hort. Society.

LIFE MEMBERS.

Aldrich, H. A	Fruit Grower	Neoga.
Archer, A. S		Pittsfield.
Alkire, T. H	Farmer	Sweetwater.
Alkire, A. D	Farmer and Fruit Grower	Sweetwater.
Augustine, H	Nurseryman	Normal.
Augustine, Archie M	Nurseryman	Normal.
Anschick, Conrad	Fruit and Vegetable Grower	Colorado Springs, Col.
Albers, F. H	Deputy Circuit Clerk	Carlyle.
Bra-field, T. H	Farmer	Sweetwater.
Bryant, H. G	Nurseryman	Fremont, Neb
Bryant, G. A	Nurseryman	Princeton.
Bryant, L. R	Orchard Frts, Cider & Vinegar	Princeton.
Buckman, Benjamin	Fruit Grower	Farmingdale.
Boothby, Walter		Pittsfield.
Brown, W. H	Farmer	Canton.
Brown, G. A		Ashton.
Bacus, Wm. H	Fruit Grower	Strout.
Baker, J. W	Traveling Salesman	Gladstone.
Black, S. N	Farmer and Fruit Grower	Clayton.
Beal, L. N	Fruit Grower	Mt. Vernon.
Burrill, T. J	Dean of Hort. Univ. of Ill	Urbana.
Crosby, J. N	Fruits and Asparagus	Wichert.
Cotta, J. V	Nurseryman	Nursery.
Carr, E. R		Ellisville.
Dunlap, Henry M	Orchard Frts., Cider & Vinegar	Savoy.
Denney, H. F	Farmer and Fruit Grower	Augusta.
Emrich, W. S		Casey.
Emerick, David	Fruit Grower	Paris.
Foster, Geo. J	Nurseryman	Normal.
Farron, J. A	Farmer and Banker	Griggsville.
Felmley, John S	Asst. Cashier Bank	Griggsville.
George, Ira R		Ashton.
Grimsley, W. R	Farmer	Sweetwater.
Gilbert, W. H	Farmer	Belvidere.
Hartwell, J. L	Small Fruit Grower	Dixon.
Hinkley, A. A	Fruit Grower	DuBois.
Hanon, Jesse	Fruit Grower	Flora.
Hall, Rev. Claiborne	Farmer	Athens.
Hill, D	Nurseryman	Dundee.

Hollinrake, Geo. S	Strawberry Plants and Fruits	Keithsburg.
Hubbard, L. G	Fruit and Vegetable Grower	Urbana.
Heinl, Frank J	County Clerk Morgan Co	Jacksonville.
Huber, Edward	Farmer and Fruit Grower	Illinois City.
Hamilton, J. M	Farmer.	Rantoul.
Johnson, Jas. T	Farmer and Fruit Grower	Warsaw.
Knecht, J. E	Commission M'cht,	S. Water St., Chicago.
Kriebel, Daniel S	Fruit Grower	Springfield.
Lloyd, W. B., Agricultural Editor Farm, Field and Fireside		Glen Ellyn.
Lasbury, M. N		Griggsville.
La Rosh, S. D	Fruit Grower	Pekin.
Lake, Geo. L	Student Univ. of Ill	Williamsville.
Martin, H. S	Orchardist and Lawyer	Marion, Kan.
McClure, G. W.,	Fruit and Vegetable Grower	Jackson, Miss.
Norris, Jas	Farmer	Yates City.
Pennell, F. W	Lawyer and Farmer	Danville.
Periam, Jonathan	Editor	Chicago.
P land, B. J., M. D		Danville.
Phillips, Henry	County Judge	Virginia.
Riehl, E. A	Fruit Grower	Alton.
Reasoner, Rev. J. R		Fisher.
Reid, Wm	Farmer and Fruit Grower	Neoga.
Reynolds, Joshua	Fruit Grower	Odin.
Robbins, Dan'l E	Farmer and Apiarist	Payson.
Redden, L	Fruit Grower	Villa Ridge.
Ribble, G. W	Farmer and Stock Raiser	Hettick.
Stenson, R. B	Fruit Grower	Anna.
Shaw, Fred		Summer Hill.
Shaw, Ray		Summer Hill.
Stanton, J. W	Orchardist	Richview.
Smith, D. W		Springfield.
Snyder, J. F		Cornell.
Stone, Jas. A	Farmer and Apiarist	Bradfordton.
Singer, E. J	Fruit Grower	3101 N. Adams St., Peoria.
Shank, Daniel	Nurseryman	Clayton.
Swift, E. C	Amateur Fruit Grower	Ottawa.
Thompson, D. F	Farmer and Fruit Grower	Kent.
Tincher, J. W	Farmer	Xenia.
Ure, J. C	Florist, Argyle Park	Chicago.
Voris, F. D	Orchardist and Merchant	Neoga.
Webster, C. H	Fruit Grower	Centralia.
Winn C. G	Farmer and Orchardist	Griggsville.
Williams, F. L	Nurseryman and Fruit Grower	Tamaroa.
Wirt, Geo	Nurseryman	Alpha.
Warfield, B. C	Small Fruit Grower	Sandoval.
Weir, Wm. T	Fruit Grower	So. Henderson.
Winkler, Joe H	Attorney	Oakland.
Walstrom, J. A	Small Fruits	Princeton.
Williams, Jno. R., with Westinghouse Air Brake Co		St. Louis.
Whitnell, C. W	Dealer in Nursery Stock	Peoria.
Walker, Wm. L	Fruit Grower	Odell.

ANNUAL MEMBERS.

Archer, A. M., Market Gardener and Fruit Grower		New City.
Alson, A	Farmer and Fruit Grower	Springfield.
Bryant, A. W	Fruit Grower	Princeton.
Bryant, Arthur	Nurseryman	Princeton.
Baldwin, M. A	Nurseryman	Jacksonville.
Barnard, O. W	Farmer and Fruit Grower	Manteno.

Blair, Albert	Fruit Grower	St. Louis, Mo.
Cotta, H. R	Nurseryman	Freeport.
Chartrand, Jas. D	Farmer	East St. Louis.
Calloway, L. H	Fruit Grower	Bethel.
Curtis, B. O	Fruit Grower and Nurseryman	Paris.
Doan, H. L	Fruit grower	Jacksonville.
Dyer, W. S	Farmer and Fruit Grower	Springfield.
Dintleman, L. F	Nurseryman	Belleville.
Friend, J	Farmer and Fruit Grower	Nekoma.
Freedland, A. S	Farmer	Dalton City.
Funk, J. H	Nurseryman	Boyerstown,Pa
Goodrich, T. E	Fruit grower	Cobden.
Gastman, E. A	Superintendent Schools	Decatur.
Grundy, Fred	Farmer	Morrisonville.
Helms, F	Fruit Grower	Belleville.
Hammond, M. S	Farmer	Warsaw.
Harrison, H. F	Horticulturist	Morrisonville.
Herriek, Dwight	Fruit grower	Roehelle.
Hertel, Chas	Supt. schools St. Clair county	Belleville.
Johnson, F. C	Cider and Vinegar	Kishwaukee.
Jolly, J. F	Fruit Grower	Olney.
Jackson, Wm	Fruit Grower	Godfrey.
Jochson, L. C		Belleville.
Kriebel, E. S		Springfield.
Mandel, Wm		Bloomington.
Mudge, E. T		Peru.
Miller, H. M	Fruit Grower	Waverly.
Mendenhall, E. G	Nurseryman and Fruit Grower	Kinmundy.
McSpadden, Mrs. J. T	Fruit grower	Neoga.
Owens, N. G	Nurseryman	Springfield.
O'Neal, J. C	Farmer and Fruit Grower	Arnold.
Perkins, W. H		Quincy.
Phoenix, T. S	Nurseryman	Bloomington.
Pendergast, Stephen		Phoenix, Ky.
Pearson John M	Fruit grower	Godfrey.
Riehl, E. H	Fruit grower	Alton.
Richeson, John	Superintendent Schools	East St. Louis.
Spalding, W. F., Market Gardner and Fruit Grower		Springfield.
Thurston, H. F	Editor Farmer's Review	Winetka.
Vorberg, H		Hailey, Idaho.
Van Dervort, J. M		Tiskilwa.
White, B. W		Morris.
Woodruffe, Alfred	Grafton Road, Auckland.	New Zealand.
Young, Wm. A	Farmer and Fruit Grower	Butler.
Zook, J. L	Fruit Grower	Olney.

FORMULAS FOR PREPARING

Insecticides and Fungicides.

INSECTICIDES.

For destroying the codling moth, canker worm, curculio and leaf insects of various kinds that infest apple, pear, peach, plum, etc.

Mix a pound of London purple or Paris green in half a pail of water, stirring until every lump and particle of dry material is thoroughly incorporated; then dilute with 200 gallons of water for the first spraying. For the second spraying, increase the amount of water by the addition of forty gallons more. If a third spraying is required, add still another forty gallons of water. The foliage is more easily injured as the season progresses, therefore the necessity of diluting the material used at each subsequent application. Apply after the bloom falls and at intervals of ten days thereafter.

FUNGICIDES.

For the destruction of the leaf scab on apple, pear and cherry trees, mildew on grapevines, grape rot, etc.

Bordeaux Mixture—Dissolve six pounds of sulphate of copper in hot water in a wooden vessel. Slake four pounds of fresh lime in another vessel and strain out all the coarser material. Mix the lime and sulphate of copper and dilute this with from fifty to seventy-five gallons of water. This is for use on plants in leaf.

Copper Sulphate Solution—Dissolve one pound of sulphate of copper in twenty-five gallons of water and use in this form. This is for use only on plants in early spring, before the leaves appear.

Combination Mixture for Both Insects and Fungi—London purple or Paris green has been used very successfully in combination with the Bordeaux mixture by simply putting the two mixtures together into one spraying tank or barrel.

TO DESTROY THE BARK LOUSE, ETC.

Kerosene Emulsion—One pound common soap dissolved in one gallon of hot water; add two gallons of kerosene and churn, with a force pump if you have it, or by stirring until the kerosene and soapsuds are thoroughly mixed. If the work has been properly done the product will have the appearance of thick cream, and the oil will not separate. For use, dilute with thirty to seventy-five gallons of water.

REMARKS.

The above mixtures and solutions should be applied with a force pump, through a suitable spray nozzle. As many pumps are now manufactured for this special purpose, they are easily obtained through your hardware merchant at reasonable prices. By attaching the pump to the side or end of a fifty-gallon barrel or larger tank, you are prepared in a moment to place in the wagon, fill with the spraying material and go to work. There are smaller pumps for the use of those who have but few plants and trees to spray.

Apple, pear, plum and cherry trees should be sprayed immediately after the bloom has fallen, and once or twice thereafter at intervals of ten days; but if the weather is rainy and the material is washed from the foliage by the rain within a day or two after the spraying was done, then you should apply the spray again without waiting the ten days. Much depends upon the amount of rain, as in a dry season two applications will probably be all that is needed, while in a very wet season four or five applications might be required.

For scab, apply once before leaves start, the second time as buds are bursting, and again after bloom has fallen. To prevent grape rot it is thought best to apply the remedy early in the spring to canes and posts, before the foliage starts and again several times after the grape is out of bloom and the fruit begins to form. The Bordeaux mixture is probably the best preventative of grape rot, and is not at all dangerous in its use.

It must be borne in mind that while fungus diseases are preventable, they are not curable; hence the application must be made before the disease appears.

Potato Culture—One of our greatest obstacles to successful potato growing is the leaf blight, which attacks the leaves of the plants, usually about the time they come into bloom. To prevent this, and at the same time destroy the potato beetle, spray the vines with the combined mixture referred to above. This potato leaf blight seems to be about as bad in dry as in wet weather, and the spraying should be done every ten days or two weeks, without reference to weather, until the crop is practically made.

Some of our more advanced investigators are recommending the use of a solution of sulphate of copper alone throughout the season, as a fungicide. The strength used after the leaves are out is one pound in eighty gallons of water. For this, rain or river water alone should be used, because most of our well water has more or less lime, and this, with the sulphate of copper, forms a very dilute Bordeaux mixture, which might not have sufficient strength to accomplish the purpose.

List of Fruits, by Districts.

RECOMMENDED BY

The Horticultural Society of That District.

*FOR NORTHERN ILLINOIS.

APPLES—For a Farmers' Orchard of 100 trees:

Summer—3 Yellow Transparent, 5 Duchess, 2 *Benoni, 2 Whitney, 2 Lowell, 2 Hyslop Crabs.

Fall—3 *Maiden's Blush, 5 Wealthy, 5 Snow, 3 Cayuga Redstreak, 3 Wolf River, 3 Longfield, 2 *Ramsdell's Sweet.

Early Winter—10 *Jonathan, 3 *Roman Stem, 5 Pewaukee, 5 Grimes' Golden.

Late Winter—7 *Minkler, 10 *Willow, 8 Ben Davis, 7 *Salome, 5 Northwestern Greening.

For a Commercial Orchard of 1,000 trees:

Summer—50 Yellow Transparent, 100 Duchess.

Fall—75 *Maiden's Blush, 75 Wealthy.

Early Winter—200 *Jonathan, 200 Pewaukee.

Late Winter—150 *Ben Davis, 150 *Willow, 100 *Minkler.

For the northern part of the district it is recommended to top-work varieties marked with a star (*) on extra hardy congenial stock trees.

FOR CENTRAL ILLINOIS.

APPLES—For a Family Orchard:

Summer—Red Astrachan, Duchess, Keswickcodlin, Benoni, Sweet June, Saps of Wine.

Fall—Maiden's Blush, Wealthy, Snow (Famense), Ramsdell's Sweet, Rambo.

---

*The District Society failed to revise the list this year.—SECRETARY.

Early Winter—Jonathan, Grimes' Golden, Roman Stem.
Late Winter—Minkler, Willow, Ben Davis, Rawle's Janet.
Commercial Orchard of 1,000 trees:
Summer—25 Red Astrachan, 75 Duchess, 25 Keswick-Codlin.
Fall—20 Maiden's Blush, 10 Wealthy, 20 Snow, 10 Ramsdell's Swaet.
Early Winter—100 Grimes' Golden, 100 Jonathan.
Late Winter—250 Ben Davis, 115 Willow, 150 Minkler.

CRAB APPLES—Hyslop, Mortha, Whitney.

STANDARD PEARS—Tyson, Kieffer, Howell, Seckel, Flemish Beauty.

DWARF PEARS—Duchess de Angouleme, Louise Bonne de Jersey.

PEACHES—Elberta, Thurber, Early Crawford, Champion.

PLUMS—Pottawatamie, Wild Goose, De Sota, Wolf, Blue Damson.

CHERRIES—Early Richmond, Montmorency, English Morrello.

BLACKBERRIES—Snyder, Ancient Briton.

RASPBERRIES—*Red:* Cuthbert, Turner, Loudon. *Black:* Eureka, Kansas, Nemaha, Gregg.

STRAWBERRIES—Crescent, Warfield, Lovett's Early, Haverland, Bubach. Late—Gandy, Parker Earle.

GRAPES—Moore's Early, Concord, Worden, Niagara, Pockington, Brighton.

FOR SOUTHERN ILLINOIS.

APPLES—For a Farmer's Orchard.
Summer—Red Astrachan, Early Harvest, C. R. June, Sops of Wine, Benoni, Cornell's Fancy, Jeffries, Sweet Bough, Keswick Codlin.
Fall—Maiden Blush, Grimes' Golden, Lowell, Jonathan, Mother, Ramsdell's Sweet.
Winter—Ben Davis, Minkler, Rome Beauty, York Imperial, Winesap, Rawles' Janet, White Pippin.

APPLES—For Market.
Summer—Yellow Transparent, Sops of Wine, Benoni, Duchess of Oldenburg, Jeffries, Early Pennock, C. R. June, Sherwood's Favorite.

Fall—Lowell, Jonathan, Grimes' Golden, Penn. Red Streak.
Winter—Ben Davis, Minkler, York Imperial, Winesap.

Pears—Tyson, Bloodgood, Osborn Summer, Duchess, Clapp's Favorite, Bartlett, Howell, Sheldon, Anjou, Easter Beurre, Winter Nellis, Vicar of Winkefield, Keiffer, Koonce, Clargeau.

Peaches—Mount Rose, L. E. York, E'y Barnard, Ede, Elberta, Stump, Old Mixon (free and cling), Chairs' Choice, Stevens' Rareripe, Red Heath, Wilkins, Smock, Ward's Late, Thurber.

Cherries—E'y Richmond, Montmorency, Wragg, English Morrillo.

Grapes—Winchell, Norfolk, Worden, Niagara, Goethe, Norton's Virginia, Cynthiana, Lindley, Wilder, Woodruff Red.

Blackberries—Early Harvest.

Raspberries—

Red—Turner, Brandywine, Hansell.
Black—Souhegan, Eureka, Kansas, Gregg, Palmer.

Gooseberries—Houghton, Downing.

Currant—Wilder, Red Dutch.

Strawberry—Beder Wood, Michael, Crescent, Bubach, Haverland, Warfield, Lovett, Lady Thompson, Gandy, Bisel.

PROCEEDINGS

OF THE

FORTY-SECOND ANNUAL CONVENTION

OF THE

Illinois State Horticultural Society

HELD IN THE

SUPREME COURT ROOM OF THE STATE HOUSE

AT SPRINGFIELD, ILLINOIS,

Tuesday, Wednesday and Thursday, December 28-30, 1897.

MORNING SESSION—TUESDAY.

The convention was called to order by the President, T. E. Goodrich, of Cobden, Illinois.

Dr. Logan, of Springfield, on invitation of the Chairman, offered prayer.

Mr. Arthur Bryant, of Princeton, presented his report as Treasurer for the year 1897, which report is as follows.

TREASURER'S REPORT.

ARTHUR BRYANT, in account with The Illinois State Horticultural Society.

RECEIPTS.

Dec. 26, 1896—Balance on hand	$2,749 00	
Life memberships	20 00	
Annual memberships	38 00	
Jan. 23, 1897—Annual memberships from Secretary	62 00	
May 1, 1897—Half yearly appropriation	2,000 00	
Dec. 13, 1897—Half yearly appropriation	2,000 00	
		$6,869 00

EXPENDITURES.

General fund	$3,737 37	
Experimental work	938 09	
		$4,675 46
Balance in treasury		$2,193 54

EXPENDITURES IN DETAIL.

Date 1896.	Order No.	General Fund.	Amount.
Dec.	28 245½	Whitehead, Hoag & Co., badges and express on same	$25 38
"	28 246	Dunlap & Livingston, printing letter heads and blanks	7 00
"	28 247	The Gazette Printing Co., printing stamped envelopes and blanks	27 75
"	28 248	Jas. T. Johnson, premiums	18 00
"	28 249	C. H. Webster, premiums	46 00
"	28 250	H. M. Dunlap, premiums	28 00
"	28 251	S. De La Rush, premiums	7 00
"	28 252	J. J. Cart, premiums	15 00
"	28 253	S. H. Black, premiums	2 00
"	28 254	H. M. Miller, premiums	3 00
"	28 255	L. R. Bryant, premiums	26 00
"	28 255½	Wm. A. Young, premiums	22 00
"	28 256	J. T. McSpadden, premiums	19 00
"	28 257	L. F. Dintleman, premiums	9 50
"	28 258	F. Helms, premiums	6 00
"	28 259	J. W. Fitch, premiums	2 00
"	28 260	E. A. Riehl, premiums	1 50
"	28 261	Wm. L. Walker, premiums	50
"	28 262	F. D. Voris, premiums	3 40
"	28 263	Alice Riehl, premiums	3 20
"	28 264	E. A. Riehl, program expense	5 05
"	28 265	J. W. Stanton, board meeting	5 00
"	28 266	L. S. Spencer, program expense	3 06
"	28 267	C. E. Tobey, program expense	30 82

EXPENDITURES IN DETAIL.

Date 1896.	Order No.	General Fund.	Amount.
Dec.	28 268	R. Morrill, program expense	$13 35
"	28 269	Wm. Service, program expense	10 00
"	28 270	J. N. Fitch, program expense	18 98
"	28 271	H. Augustine, program expense	4 00
"	28 272	H. Augustine, delegate expense	19 20
"	28 273	Arthur Bryant, board meeting	14 75
"	28 274	T. E. Goodrich, expense board meeting	17 62
"	28 275	J. L. Hartwell, expense board meeting	11 80
"	28 276	J. W. Stanton, expense delegate Missouri	29 10
"	28 277	H. M. Dunlap, Secretary salary and office rent	250 00
"	28 278	A. M. Augustine, assistant secretary	25 00
"	28 279	J. T. McSpadden, program expense	3 40
"	28 280	T. J. Burrill, program expense	7 40
"	28 281	H. M. Dunlap, incidental expense	2 86
"	31 282	St. Nicholas Hotel, program expense	21 25
"	31 283	L. R. Bryant, program expense	7 04
1897.			
Jan.	16 284	Arthur Bryant, expense board meeting	13 15
"	16 285	H. M. Dunlap, expense two board meetings and office expense	20 70
"	16 286	H. Augustine, expense board meeting	5 77
"	16 287	H. Augustine, committee expense	4 35
"	16 288	J. L. Hartwell, committee expense	12 82
"	16 289	Arthur Bryant, commission as treasurer 1896	84 44
"	16 290	J. W. Stanton, expense board meeting	11 70
"	16 291	T. E. Goodrich, expense board meeting	24 37
"	16 292	J. Webster, expense board meeting	8 00
"	16 293	H. B. Andrews, stenographic rep't annual meet'g.	80 00
"	16 294	H. M. Dunlap, postage and incidental expenses	50 00
"	16 295	H. M. Dunlap, reading proof Vol. 30	50 00
March	4 296	H. Augustine, committee expense	14 60
"	4 297	J. L. Hartwell, expense delegate to Wisconsin	5 78
Feb.	25 298	H. W. Rokker, printing Vol. 30 in part	1,188 80
Mar.	23 299	H. W. Rokker, balance due for printing Vol. 30	301 70
June	7 300	H. Augustine, committee expense	29 55
July	6 301	H. M. Dunlap, salary to July 1, office rent, help	250 00
Aug.	28 302	Jabez Webster, expense adinterim committee	15 10
Aug.	28 303	H. M. Dunlap, expense ad interim committee	9 68
Sept.	2 304	T. E. Goodrich, expense ad interim committee	23 10
Sept.	28 305	J. Webster, expense ad interim committee	20 25
"	28 306	J. W. Stanton, expense board meeting	5 50
"	28 307	L. R. Beal, expense ad interim committee	20 25
"	28 308	J. W. Stanton, expense ad interim committee	31 80
"	28 309	J. L. Hartwell, expense board meeting and com.	28 26
"	28 310	H. M. Dunlap, expense board meeting	3 75
"	28 311	J. Webster, expense board meeting	8 25
"	28 312	T. E. Goodrich, expense board meeting	21 80
"	28 313	H. Augustine, expense board meeting	6 10
"	28 314	C. G. Winn, expense board meeting and committee	17 01
"	28 315	L. Woodward, treasurer, exp. northern society	50 00
"	28 316	Jas. T. Johnson, treasurer, exp. central society	50 00
"	28 317	Champ. Co. Printing Co., printing slips and tags.	5 25
Nov.	6 318	J. L. Hartwell, board meeting expense	8 65

EXPENDITURES IN DETAIL.

Date. 1887.	Order No.	General Fund.	Amount.
Nov.	6 319	H. M. Dunlap, expense board meeting	$6 00
"	6 320	J. Webster, expense board meeting	20 39
"	6 321	T. E. Goodrich, expense board meeting	26 15
"	6 322	Arthur Bryant, expense board meeting	8 20
"	6 323	J. W. Stanton, expense board meeting	6 00
"	6 324	H. Augustine, expense board meeting	11 87
"	8 325	C. G. Winn, expense board meeting	10 36
"	8 326	Champ. Co. Printing Co., printing and stationery	5 80
Dec.	6 327	L. R. Bryant, expense for committee service	13 22
"	6 328	E. G. Mendenhall, treas., exp. southern socieiy	75 00
"	13 329	E. A. Riehl, expense delegate Ohio meeting	33 45
"	20 330	A. M. Augustine, treas., expense central society.	75 00
"	27 331	L. Woodward, treas., expense Northern Illinois Horticultural Society	75 00
"	27 332	Arthur Bryant, delegate to Minnesota	21 02
"	27 333	Dunlap & Livingston, printing	7 50
"	27 334	J. W. Stanton, expense delegate to Missouri	16 49
"	27 335	H. M. Dunlap, ad interim expense	7 65
"	27 336	Champ. Co. Printing Co., printing programmes, envelopes, etc	23 50
"	27 337	H. M. Hunlap, express, freight, postage, telegrams, etc	42 93
			$3,737 37

Date. 1896.	Order No.	EXPERIMENT FUND.	Amount.
Dec.	28 120	S. A. Forbes, whale oil soap and freight	$10 63
"	31 122	H. Augustine, committee expense	18 65
"	31 123	H. Augustine, director experiment station	25 00
"	31 124	Arthur Bryant, director experiment stations	25 00
"	31 125	E. A. Riehl, director experiment stations	25 00
1897			
Jan.	18 126	C. H. Webster, expense rent, etc., station No. 7.	28 50
"	16 127	E. A. Riehl, expense meeting com. control	8 80
Feb.	27 128	E. A. Riehl, purchasing stock southern district.	50 00
"	25 129	M. S. Hammond, expense station No. 5, 1896	25 00
April	2 130	T. V. Munson & Son, stock for experim't stations	8 80
"	2 131	J. R. & Wm. Parry, stock for experim't stations.	17 71
May	29 132	The Storrs Harrison Co., stock for north'n dist.	24 15
June	11 133	E. A. Riehl, stock for southern district	26 38
"	12 134	H. L. Doan, express on plants central district	3 25
July	6 135	Fred E. Young, nursery stock southern district.	5 35
"	22 136	H. Augustine, nursery stock central district	30 00
Sept.	28 137	H. M. Dunlap, expense station No. 4, 1897	77 27
"	28 138	T. E. Goodrich, expense station No. 9, 1897	74 63
Nov.	15 139	H. Augustine	4 75
"	15 140	H. Augustine, expense visiting stations	13 55
"	23 141	E. A. Riehl, expense visiting stations	18 00
"	27 142	H. R. Catta, expense station No. 13, 1897	39 65
"	27 143	C. W. Prescott, expense station No. 3, 1897	38 00
"	27 144	J. G. Vaughn, expense station No. 10, 1897	10 00
Dec.	13 146	E. A. Riehl, expense experimental stations	14 00

Date. 1897.	Order No.	EXPERIMENT FUND.	Amount.
Dec. 27	147	Arthur Bryant, expense visiting stations	$13 15
" 27	148	H. L. Doan, experimental station expense	6 55
" 27	149	Arthur Bryant, station expense and salary	76 75
" 27	150	J. S. Browne, station expense and salary	46 50
" 27	151	J. Catta, station expense and salary	86 82
" 27	152	E. Y. Ayres, experimental station expense	25 00
" 27	153	Arthur Bryant, stock furnished stations	61 25
			$938 09

PRESIDENT GOODRICH—The report will be referred to a committee to be appointed by the Chair. We will now have the Secretary's report:

SECRETARY'S REPORT.

HENRY M. DUNLAP, Savoy, Illinois.

Mr. President and Members of the State Horticultural Society:

The past year has been a red-letter one for the fruit growers of the Mississippi valley. While nature failed to smile on all alike, those who were fortunate enough to receive her favors were especially blessed because of the unusually high prices they received for their products. There were some apple orchards loaded with fine fruit of most excellent quality and size, while others in the same neighborhood had a full crop of fruit of exceedingly poor quality. Investigating into the causes of these differences that existed, while traveling through a number of the counties of this state, I found that in almost every instance where the fruit was small in size and poor in quality, that the foilage of the trees was in a diseased condition and sadly lacking in quantity, some orchards losing their foliage early in September. The drouth which prevailed during August and September, the time when moisture is greatly needed to perfect the apple crop, had, no doubt, very much to do with the lack in size, but evidently there was something further than this in the great difference which existed in the fruit of the different orchards.

AIR DRAINAGE.

The subject of air drainage of orchards is one that has received but little attention from this Society, and in my opinion is much more important than has appeared. Shelter

belts were, in the early history of horticulture in this state, considered to be a necessity in the growing of fruit. It was argued that they protected the buds from frost in the early spring, and the fruit from winds during the summer and autumn. In the early history of the State University, located at Champaign, there was set out, under the direction of the Board of Trustees, an experimental orchard consisting of over 1,000 different varieties of apple trees. Believing that shelter belts were a good thing, they labored under the impression that you could not have too much of it, consequently they enclosed the orchard with belts of maple and other deciduous trees, with an inner belt of Norway spruce, and not satisfied with this, at short intervals, say of twenty rods, division belts of spruce were set. It will be seen from this description that this orchard was certainly well protected, but it was not a success. It was discovered that the rays of the sun in these enclosures, through which there was practically no free circulation of air, generated extreme heat, causing the buds to start earlier and they were then more liable to the injurious effects of the spring frosts than those in neighboring orchards which were unprotected. This orchard, although set out in 1868 9, has practically disappeared, and there are but few trees remaining.

The orchards to which I have referred, were in this condition, viz: the outer rows of trees were fairly covered with a healthy foliage and bearing fair specimens of fruit, while the inner rows of the orchard, towards the center, were loaded with fruit of inferior quality and size, the trees practically defoliated, or if the foliage were present it was badly covered with fungus disease. How do we account for all this? Was it that the outer trees, having a freer circulation of air, were not affected by the low temperature and the cold days of the spring, but were kept free, by the motion of the air, from fungus spores, while in the orchards better protected from the winds, the disease settled down upon the foliage and upon the fruit. I can account for it in no other way. Small orchards of a few rows were almost uniformly good; the fruit was well colored and the foliage well developed. If we are to draw any conclusions from this, it seems to me they would be: Good cultivation, plenty of space between the trees, insuring a good circulation of air and plenty of plant food. At some future meeting of the Society I hope these questions of shelter belts and air drainage will receive consideration from the scientific men of this Society and full discussion had upon them.

As another instance of the value of a good air drainage, I would call attention to the fact that in the spring of 1895 many of the orchards failed to bear because at the time of blossoming there was a low temperature and cold rains, and it was noticeable that while the temperature was very low, yet what fruit there was was in the more exposed situations in the orchards. In one orchard in particular that came under my observation, there was a natural growth of timber along the north and west sides, with several breaks or openings through said timber, and where the orchard was well sheltered there was no fruit, but in the path of these openings, where the wind swept through, there the trees contained a good crop.

COOL AND COLD STORAGE.

No topic of greater importance than this can come before the commercial fruit grower at this time. The scarcity of fruit at the east and north this season made it possible for the fruit grower to realize upon his crops while in the orchard. In fact, there was a scramble on the part of the speculators to buy the fruit in the orchard, and the most of it was sold in that way. We cannot expect this condition to exist very often. There will come years of immense crops, and the apples upon the hundreds of thousands of acres of apple orchards in the state of Illinois will be hard to dispose of. When that time comes the question of storage of fruit will be an important factor. Let us look ahead and ascertain what is best for us to do, and proceed at once to move in that direction.

The fruit growers of other states are already putting up cool storage houses for the purpose of carrying their fruit over until a more favorable season has arrived for the marketing of it. Illinois should look to the future also. In a recent trip into Missouri, I found occasion to talk with many practical orchardists, and found they were supplied, in some instances, with cool storage buildings. These are constructed sometimes in a very primitive but satisfactory manner, as follows: A narrow ridge is selected, the earth is removed across this ridge, leaving the end of the opening on either side of the ridge for ventilating purposes, and for the putting in of the fruit. Posts are set upright and poles cut and laid in between the wall and these upright posts. The ends are boarded up, with doors sufficiently large for quick ventilation, and the roof is covered over with poles, cornstalks, dirt or other material. By a proper ventilation the

temperature is reduced, and whenever the temperature outside is higher than that inside, the doors are kept closed, and when the reverse is the case the doors are opened.

A different style of fruit house made by some, is a frost-proof building of sufficient capacity for the products of the orchard, so constructed that proper and rapid ventilation of same may be had in the manner above specified.

Cold storage houses as now constructed have ceased to be an experiment, and are regarded now as a necessity. With cool storage houses, however, upon the farm, or in the towns, all late-keeping varieties of fruit might be stored in such building, while the early winter varieties are best kept in cold storage.

It will be seen that fruit growers could form a company and put up buildings in each neighborhood that would answer for the community in place of the individual. This would undoubtedly be the least burdensome upon the fruit growers, and could probably be done at much less expense to all concerned. This also is a subject which has not been exhausted in its consideration by this Society.

THE MARKETING OF FRUITS.

After successfully growing the fruit, it is an important matter for the fruit grower to understand how best to market the same. There are many people in this world who are trying to get something for nothing. It should be the aim of the honest fruit grower to so conduct his business that he always will have customers for his fruit. The saying that the immortal Lincoln has given us, that "you cannot fool all the people all the time," is one which is applicable in fruit growing as in everything else, and the grower who makes it a point to pack his fruit honestly, and gives the buyer full value for his money, both in the size of the package and the quality of its contents, will scarcely ever fail of receiving a profit on his investments. A contrary course should and will result in failure in time. Buyers are skeptical in purchasing fruits until they are satisfied of the honesty of the packer or grower, and one who has a reputation to make, expecting to remain in the business for any length of time, certainly should not fail to honestly pack, for in this case honesty is certainly the best policy, even if it comes from no higher motive than to make one's business successful.

ADDITIONAL AD INTERIM NOTES.

These remarks are largely from observations during the past year, in the course of ad interim work.

In August of this year I was a member of a party composed of President Goodrich, the President and Vice-President of the Southern Society, the President and Vive-President of the Central Society, and the Vice-President of the Northern Society, who made a brief trip to Lincoln and Williamsville, Illinois, and visited the original trees of the noted Lincoln and Sudduth pears. We visited the grounds of Mr. Jones, several miles west of the city of Lincoln, and saw an old pair tree of the Lincoln variety, and also about a mile further south, what was pointed out to us as the original Lincoln pear tree. Neither of these trees were in fruit this season. Upon the younger one of these we noted some slight indications of blight; otherwise the trees appeared perfectly healthy. From what we know and have observed regarding this variety of pair, we are free to say that we believe it to be one of the valuable varieties for Central Illinois, both for market purposes and for family use. We also visited the original Sudduth pear tree, on the farm of Titus Sudduth, some seven miles from the city of Williamsville, in Sangamon county. We had heard a great deal of this wonderful tree which is about seventy-seven years old, the seed of which was planted by one of the early settlers of Sangamon county, having been brought here from the east. The size of the tree is very remarkable. We judge that it was at least fifty feet in height, and over three feet through in the trunk. In fact, standing upright, on opposite sides of the trunk of this tree, two men with outstretched arms could barely touch hands. The tree was laden with fruit, which at this season was not very large, but there was a good deal of it. From the original tree we visited nine other trees of the same variety, ranging from thirty-five to fifty years of age, on different farms, that were said to be suckers taken from the original tree. They were certainly of the same variety, having the habits of growth and similar fruit. These were all giants and bearing heavy loads of fruit. We were very favorably impressed with some younger trees—some six years of age—that were planted in a yard in this vicinity. The foliage of these trees was very fine, of a dark green color and healthy appearance. The trees were very symmetrical and thrifty, and models in every respect. There were no indications of blight on any of these trees, and we were careful to look for same. The fruit at this

time was green and hard, and no opinion could be formed as to its quality. During the last of September or first of October, we received, through the kindness of Mr. Augustine, a box of fruit taken from these trees. It was of medium size, and of good quality. From everything that I could learn in regard to this variety, I am inclined to believe it a valuable acquisition, certainly for family use. It must be borne in mind, of course, that the fruit spoken of was grown upon very old trees. I should be glad if I could have seen the fruit grown on trees of from ten to twenty years of age, as a more correct conclusion could be arrived at as to its value for commercial purposes.

The Illinois State Horticultural Society is certainly to be congratulated upon its past, its present and the prospects for its future. Its membership consisting of active fruit growers having the interest of the Society at heart, it cannot, in the future, fail to meet the expectation of those who are interested in the advancement of the horticultural interests of this great State of Illinois, if its members retain the same interest in its welfare as now.

In conclusion, the following summary of the expenses of the Society is given for the information of the members:

EXPENDITURES.

Expense of publishing volume 30—5,000 copies	$1,489 70
Expense of conducting the experiment stations, 1897	961 89
Expense of executive board mee ings, 1897	298 01
Expense of committee work, 1897	346 06
Programme expense, Springfield meeting, 1896	126 95
Premiums on fruits and vegetables, 1896	205 50
Salary of secretary	400 00
Stenographer's report of annual meeting and assistant secretary	105 00
Extra office help, rent, etc	100 00
Postage, printing and stationary, 1897	143 62
Appropriated towards expenses of district societies	325 00
Commission paid treasurer for year 1896	84 44
Express and freight during the year	23 54
Reading proof, volume 30	50 00
Telegrams and incidental expenses	13 43
Total expenses for the year ending December 27, 1897	$4,674 14

President Goodrich—The Secretary's report will be referred to the same committee as the Treasurer's report,

President T. E. Goodrich delivered his annual address as follows:

PRESIDENT'S ADDRESS.

The past season has been a little better and a little more prosperous than the two previous. Money has been a little more plenty. The clouds of panic and financial depression, that have lowered over the land, blackening the financial horizon, have lifted a little since our last meeting, and are showing a silver lining. No longer are financiers asking, Watchman, what of the night? Tell us what its signs of promise are!

The sky has cleared a little and the rainbow of promise is appearing. Men are beginning to venture out a little from the cover where they ran when the storm made its appearance.

They are venturing out into the field of active operation.

They are resuming the tasks hastily laid aside when the storm broke.

Prosperity is on the march. The head of the procession is in sight. Let us hope its coming will not be delayed.

Factories are resuming operation and finding more and more need for labor.

And labor is buying its supplies instead of living faitly on charity.

It is resuming its function as a fruit consumer.

It is a singular paradox that laboring men place fruit on the list as a luxury, and beer and tobacco as necessaries.

A reversal of this rule will produce more comfort and less insanity.

Heavy crops have not been as universal this year as last. Apples in the east and Canada have been in small supply, while those of Illinois have been abundant nearly all over the state, and of good quality. The dealers of Michigan, New York, and even Canada, have repeated the words of Jacob and gone "down into Egypt to buy."

Apples have been in good demand, and sold readily on the trees at twice last years prices. Irish potatoes have been bought up for storing at nearly three times the price of a year ago. It has been the off year with other states, and Illinois has benefited by the situation. Now suppose our trees keep on bearing on the off years as they have begun. Suppose they can be persuaded to keep up this habit until it becomes fixed. It will insure an apple crop in seasons of high prices for years to come.

It speaks well for the good quality of our apples, when buyers from half a dozen states engage in lively competition for the crop.

If we have pleased them once why not again? Why not maintain so high a grade of excellence as to keep them for regular customers?

If this can be done the problem of profitable apple growing will have been solved.

The practice of pasturing hogs in the apple orchard as soon as the apples begin to fall from the trees. is to be encouraged. Their presence fertilizes the ground, and their voracious appetites consume many apples with their troublesome contents.

This must tell for good on the quality of the crop. Vast quantities of insects can thus be destroyed in an easy and cheap manner, and one quite agreeable to the swine.

Regarding California competition I quote the following from Geo T. Powell in "Fruit:"

"WESTERN COMPETITION.

The present season is finding a very largely increased quantity of California, Colorado and Washington fruit in our Eastern markets. As many as 130 carloads of California fruit alone have been shipped to New York in a single week this summer. The buyers are seeking this Western fruit in preference to that grown at the east. Hudson River Bartlett pears could hardly be sold at any price while the California Bartletts were on the market.

New York orchardists will have to wake up to the fact that their best markets are steadily being filled with fruit grown thousands of miles away and it is growing in favor because the quality and packing is so much better than that grown in the east.

New York growers will have to change their methods, give higher culture, grade, and pack their fruit better if they hold their own markets. Poor grade fruit is not wanted, and buyers will deal in the best wherever it may come from. We have most superior advantages in many ways, but we are not benefiting by them as we might."

Let us hope the above is an over estimate. New York Bartletts have long been celebrated for their excellence and have always sold at the top. Are they to be supplanted by something grown so far away? The markets of Illinois are invaded in the same way. Are we to submit?

Shall we strike our colors to the western grown fruit? Here is a foeman worthy of our steel. Let us improve our quality, and overhaul our packing.

They have freedom from insects and blight. They also have long distance and high freight. We have light freight, Ben Davis and the Keiffer. Surely we ought to win.

Win success; and success means dollars,
The kind of dollars we never stop to tell:
The little golden dollars,
The square paper dollars,
The big silver dollars that we all love so well.

There is a suggested movement to have the science of Horticulture taught in the public schools of Illinois. By Horticulture is not meant the growing of fruit; not the money part so much as the esthetic.

The green grass and the flowers. The trees and singing birds. The requisites that distinguish an oasis from a desert. That beautifies the home yard, the school yard and the silent cities of the dead. Why should not our schools in addition to botany, teach children, that growing plants and trees were gems of the Creator and too sacred to be ruthlessly destroyed. That feathered songsters were nearly as sacred as human life, and that to needlessly destroy one was a crime. That green verdure and opening flowers are emblems of paradise. Teach the children the love for the beautiful. Help them to grow up to love the green earth on which they tread. If brought up to admire and enjoy the beautiful yard of a neighbor, they will have greater respect for his property and his rights.

The result will be less envyings and less covetousness. Fewer feuds and lawsuits.

Surely, girls and boys thus taught, will grow up into better men and women; better fathers and mothers, and better citizens.

President Goodrich—This completes the program for this morning, Mr. Riehl not having come, we will now stand adjourned until 2 o'clock P. M.

TUESDAY AFTERNOON SESSION.

The convention met at 2 P. M., President Goodrich in the chair.

At the opening of the afternoon session, Mr. E. A. Riehl, of Alton, Ill., Director of Stations, submitted a paper on

SUMMARY OF WORK DONE IN THE EXPERIMENT STATIONS DURING 1897.

This has not been a good fruit year in all parts of the state, some of the stations reporting but little fruit. No report was received from stations Nos. 2, 5, 11 and 14.

APPLES.

Yellow Transparent—Fruited at Princeton, Savoy and Alton, all on young trees. From all these points reports are favorable, the only drawback reported being a strong tendency to blight.

MacMahon—Fruited at Princeton, Centralia and Alton, all reported favorable. It is an early bearer of large fruit, good for cooking only, but very good for that. Can be recommended as a valuable mid-summer apple.

Nero—Reported as fruiting at Savoy. Said to have dropped before mature. It has developed the same fault at Alton and will, probably on that account, prove worthless.

Ozark—Bore a full crop at Centralia.

York Imperial—Bore well at Centralia and is pronounced one of the best, by Mr. Webster.

Belle de Boscoop—As fruited at Centralia, is reported as productive, large, of good quality and a good keeper.

Indian—Fruited at Centralia, is said to resemble Rome Beauty; a fine, large, well colored fruit, productive, a good keeper and thought to be valuable.

Akin—Fruited on young trees, at Princeton and dropped before mature. A few specimens that set at Alton behaved in the same manner.

A number of other varieties fruited in some of the stations, but as they are not sorts that are prominent and as the reports will be published in detail, I will not mention them now.

PEARS.

All varieties planted long enough at Princeton to bear, are represented as dead from blight, except the Kieffer, which also shows some blight.

Rutter—Reported as fruiting, by Mr. Dunlap, Browne and Riehl. Mr. Dunlap says it is of such poor quality as to be unworthy of cultivation. Mr. Browne reports it as large, of best quality and productive. With me the quality was very

good, it bears young, sets very full, and if not thinned the quality is poor. Being such an early and profuse bearer, oi good size and one of the latest to ripen, I think it is a valuable pear if not allowed to overbear.

Anne Ogereau—Bore with me and Mr. Browne, is a late fall pear, an early and profuse bearer, of large size. Mr. Browne called it excellant, while mine I thought very poor in quality.

Mr. Webster fruited the Swiss, which he says was very poor in quality, ripening with Early Harvest.

PEACHES.

None reported as fruiting north of Alton.

Minnie—Again bore a full crop, at Alton, of fine large peaches of good quality; a truly desirable second early variety that can be recommended with confidence.

Champion—Bore at Centralia, and is said to be one of the best of its season.

Lovett's White—Bore at Alton, Centralia and Cobden, is well spoken of in all these places as a medium size peach, of Heath Free type, very productive and of good quality.

Crosby—Bore at Alton, Centralia and Cobden; a yellow peach, of good quality, small to medium size, has a strong tendency to overbear. Has not sustained the claim made for it of being more hardy than other varieties.

Chair's Choice—Has again shown itself a peach of fine quality in all respects, and can be recommended for general planting, with confidence.

CHERRIES.

Carnation—Bore a fair crop at Princeton, tree vigorous and healthy fruit of fine quality.

Suda Hardy—Bore a full crop of fine fruit at Princeton, very productive, an early bearer, very promising.

A number of Russian varieties recommended by Prof. Budd were here planted in the stations when they were first started, and although they have grown well and are good large trees and have often bloomed full, none have ever borne anything worth speaking of. They can be pronounced total failures, and the trees in the stations had better be dug up to make room for something else.

QUINCE.

Fuller—At Princeton, bore a nice crop, of good size and fine quality, while trees of Meech and Orange of same size and age bore no fruit.

JAPAN WALNUT.

Proves hardy at Princeton, where it this year bore several bunches of nuts, smaller in size and hardly as good in quality as our native butternut.

GRAPES.

A number of Munson's new variety were fruited at Alton, but so far none of them promise to be any better than varieties in general cultivation; some of them, however, are valuable for uses which our common grapes do not fill.

Early Wine—Is one of the strongest growers I know of, and retains its dark green, glossy foliage until killed by cold weather, and on this account is a fine arbor grape. The vine is productive, fruit small but of good quality.

Perry—Has proven to be the best keeper, some being on exhibition tables in good condition; they have not been in cold storage.

Nerva, Laussel—And some others, are better than our common varieties and are on that account valuable, at least for home use.

Winchell or Green Mountain—Is well spoken of by all who have fruited it except Mr. Bryant, who admits the fault may be with his manner of growing.

Woodruff—Is well spoken of by Mr. Dunlap, also fruited at Alton; makes a handsome bunch, a beautiful color, and liked by many, inclined to overbear.

Eaton—Mr. Bryant thinks it a desirable amateur grape, but says it is not productive enough. Mr. Browne, on the other hand, says it is inclined to overbear, and pronounces it better than Concord.

Ideal—Again fruited at Alton, red, bunch and berry the size of the Concord, quality as good as Delaware, ripening just after Moore's Early, inclined to overbear, valuable.

RASPBERRIES.

Smith's Prolific—Fruited at Alton and Princeton. Mr. Bryan says: Medium to small, too soft, sour; I thought it larger than Tyler or Sonhegan and fully as early.

Columbian—Mr. Bryant says, injured some by winter, very productive, fruit large, of bad color. With me it was perfectly hardy last season and is immensely productive, single plants yielding a quart at one picking on plants set spring of '96.

Egyptian—Black cap, reported by Mr. Goodrich as a good cropper, of fine size and best quality.

Loudon—Mr. Bryant says is productive, large and of fine flavor, very promising. Fruited also at Alton, is one of the best growers.

BLACKBERRIES.

Badger—Mr. Bryant says, is much like Snyder in growth of plant, appearance and quality of fruit.

Minnewaska—Mr. Bryant says wintered well and bore a full crop of fine fruit.

Piasa—Mr. Bryant says bore a good crop, fine berry, good size, excellent quality. Mr. Browne says, very early, ripening its whole crop in ten days, very productive, good grower and shipper, good keeper. Mr. Goodrich says, although five years planted, bore more heavily than ever, medium size, good quality, healthy, later than Early Harvest. I have grown this for over ten years, it is early but later than Early Harvest, the fruit is large, does not turn red after it is picked, is excellent in flavor as soon as black, a good shipper and keeper, is a moderate bushy plant, and very productive. I consider it the best of anything I have ever grown and have discarded all others.

GOOSEBERRIES.

Puyallup—Mr. Browne reports as very large, very productive, good growers, free from mildew and very desirable.

Early Orange—Mr. Bryant reports as healthy and vigorous, medium size, of best quality, and valuable for early.

CURRANT.

Wilder—Mr. Browne says grows well, bears well, is of good quality and is a good currant to plant.

Mr. Bryant says it is still satisfactory. I have found it to be the best I have grown.

STRAWBERRIES.

Clyde—Mr. Dunlap says is large, soft, fair quality, and recommends for family use. With me Clyde was very productive, very large, uniformly regular, and consider it one of the best of recent introduction.

Marshall—Mr. Bryant reports as medium size, dark red, moderately firm and sweet. With me it was of the largest size, bright dark red, productive of good quality, uniformly regular, a strong, vigorous plant, one of the best of recent introduction.

Brandywine—Mr. Bryant reports large, regular, firm, medium dark, calyxe large and prominent, productive, to all of which I can agree except that I think it hardly productive enough, and it falls off in size as the season progresses.

Wm. Belt—Mr. Dunlap reports as good in quality, firm, and a light cropper. With me the first berries were very large, but all the large berries were very much coxcombed and illshaped. Later in the season they ran down very much in size.

Bismark—Mr. Dunlap reports as large, inferior in quality, prolific and late.

Splendid—Mr. Bryant says is medium in size, bright red, fairly firm, plant vigorous and healthy promising.

Mr. Dunlap says productive, good size, fair quality.

Ruby—Was not fruited in any station this year, but it is perhaps only right that I should say that with us, as for the past ten years it has been the best I have growing. I this year fruited forty-three varieties. It is midseason too late, holding its size to the end better than any other, of the largest size, dark red clear through, of the very best quality, strongly staminate blossoms, very productive, a strong stocky plant. I have had only good reports from it from those who have grown it.

Some forty other varieties have been grown and fruited in the stations, but as there are no very marked qualities reported of them, and as the reports will be published in full they are omitted.

At Cobden some experiments in planting trees after the Stringfellow method were started in 1895. So far as the peach trees are concerned, it has proved not at all satisfac-

tory. Many more of the trees so pruned having failed to grow, and what did grow are not near so large or as good trees as those treated in the ordinary manner.

In the experiments with the pears, 100 Leconte were planted, every alternate tree being pruned after the Stringfellow method. All the pruned trees grew, two of the unpruned failed. Now the pruned trees are making stronger shoots than the unpruned, but not near so many. They are hardly as large as the unpruned, but look as though if they keep up their present pace they would surpass the unpruned in a year or two. On the other hand, the unpruned trees, while they have not made such strong shoots, have more of them and look as though they would bear a crop sooner.

These same 100 Leconte are being used for blight experiments, the idea being to see if we can not prevent the blight from attacking the bodies of the trees by some application to the trunks, such as washes of the lime, oils, etc., singly and in combination, also by the application to the soil of salt and iron.

A new small fruit station has been established at Freeport, in charge of R. H. Cotta, where were planted last spring some ninety varieties of small fruits.

Another small fruit station has been established at Jacksonville in charge of Mr. Doan. Extent of planting not reported. There was to be a new small fruit station established in the southern district, which was offered to half a dozen parties that were thought competent and reliable, but all refused to undertake the work. Mr. Browne, of Alton, having given up business in town and returned to the farm, was finally induced to take up the work again, and he has planted sixty-nine varieties of small fruits which are in good condition.

A grape station was established at Villa Ridge in charge of Mr. Ayers, where forty-three varieties were planted and grafted last spring, all in excellent condition.

Some of the stations are not doing satisfactory work. This could hardly be otherwise, considering that when they were established nobody had any experience in such matters, and some who were very anxious to have stations did not realize what it really meant to take care of our property, keep the records and make the reports. These have not taken good care of their stock, nor kept proper records and made the reports that would be of value. But some of the stations are doing excellent work and we are getting good results from them, and will do so more and more as the trees planted become of bearing age.

DISCUSSION.

MR. H. AUGUSTINE—What about the Columbian raspberry?

MR. RIEHL—Mr. Bryant says it was nearly hardy with him and bore a heavy crop; that the color was bad. With me it was one of the most productive. In the season of 1896, at a single picking, we picked a quart from a single plant.

MR. H. AUGUSTINE—In Bloomington it was marvelous in bearing, and in size some berries were an inch and a quarter in diameter.

MR. RIEHL—From one year's experience I would say that where they will sell, and for canning for home use, I think they are probably better than some other varieties.

MR. HARTWELL—I would like to ask about the Splendid strawberry.

MR. RIEHL—My experience with that variety is not sufficient to enable me to come to any definite conclusion. Its bearing qualities, vigor and healthiness of the plant agree exactly with the report; but the fruit has a tendency to be yellowish rather than red when ripe, and is not a pleasant, pretty color.

MR. BARNARD—The Columbian raspberry, I apprehend, most of the horticulturists here would not rate as a number one commercial berry. It is, however, a number one berry for canning. It is a good bearer and has great vigor of growth. I think every garden should have a few of those plants.

MR. H. AUGUSTINE—I was very favorably impressed with it this summer. I have a very few plants—not over fifty, on my own ground, and this is only its second year. The first year we planted them they made but little growth. But there was new wood came out this spring, and the plant bore enormously. The plants as they stand in a row are now taller than I am, and branch out and run down. It is not the best for a desert fruit; but for canning I think we can safely say it takes the place of Shaffer's Colossal. I think the Columbian is worth planting.

MR. BRYANT—I would like to hear from Mr. H. R. Cotta on the Columbian. He has about as many planted as anybody in Illinois.

MR. H. R. COTTA—This year was the second crop I have had of this berry. As a canning berry I have never tasted anything I liked better. As a market berry it does first rate in our market, but would not be so good for distant shipping. In some markets where the color is not known, perhaps it would not sell very well. Our market has been very good for Shaffer's Colossal, and this supplies the same demand. It is a firmer berry, keeps much better, stands up better, and is not quite so tart. The bush is the most rampant grower of any variety of raspberry that has been produced, and I think the most productive. Although I have not had it side by side with other varities planted at the same time, yet I think it is the most productive of any variety I know.

MR. H. AUGUSTINE—Is it a good berry to eat out of the hand?

MR. COTTA—Yes; it is a good berry to eat fresh picked. I prefer Shaffer's Colossal to eat right from the bushes, and the Columbian next.

MR. H. AUGUSTINE—How does it stand the winter?

MR. COTTA—Here and there it has been killed, but usually stands the winter very well.

MR. H. M. MILLER—I expected this year to have none at all, but I got a fine crop.

MR. H. AUGUSTINE—How is the bark on the Columbian?

MR. COTTA—During the winter it is a light color. The Shaffer's Colossal is a dark brown. They look quite different.

MR. HOBBS—I might say in Indiana the Shaffer's Colossal has been largely discarded on account of its susceptibility to anthracnose. I have understood the Columbian is quite free from this trouble. If that is true, I thing with its merits as a canning berry it will find a place.

PRESIDENT GOODRICH—We have as a topic on the program: "The Value of Cow Peas; Varieties and Culture," by Prof.

Eugene Davenport, of the University of Illinois. It is one of the most important subjects that the fruit-growers of Illinois have to consider:

THE COW PEA—ITS VALUE TO THE ORCHARDS.

EUGENE DAVENPORT, Dean of the College of Agriculture, U. of I.

Our list of valuable plants is being rapidly increased, both from the cultivated crops and from the native flora of other countries. The cow pea, which by the way is nearer a bean than a pea, comes to us from Southern Asia, where it was native and where it has been long cultivated for human and for animal food.

Because of its nativity it comes to us from the south where it is recognized as one of the staples and where its use has passed the experimental stage. Its northern limits of profitable growth have never been satisfactory determined, now has it been as yet fully tested for favor in competition with other crops well established in our northern agriculture.

It has proved its excellence in Southern Illinois, and has without a doubt come there to stay. The question in Illinois now is "How far north will it thrive, and how extensively shall it be employed."

When a new candidate appears for popular favor in the list of agricultural crops there are at least four fundamental considerations upon which its favor will depend, these are: Its food value; its yield; its effect upon the soil; its varieties, and the methods and economy of their cultivation.

The cow pea is greedily eaten by horses, cattle, sheep, and pigs, either in the green or dry state, and in all cases with the best results. There is no better way to harvest the crop than to "hog it down" by turning into the field while yet green. Cattle may be pastured upon it or it may be cut and fed either fresh or badly wilted. It is always acceptable and has a pronounced effect in increasing the yield of milk. It may be cut with an ordinary mowing machine and made into hay which is greedily eaten by all animals, including horses, but difficulty in curing is sometimes experienced when the weather is bad because of its large stem and rank growth.

The following table will give an idea of the nature of this food value as compared with that of other well known crops:

TABLE 1.—*Composition of Cow Pea and Soja Bean in Comparison with that of Indian Corn.*

	Water.	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Cow pea, green.....	83.6	1.7	2.4	4.8	7.1	0.4
Soja bean, green	74.8	2.4	3.0	7.3	11.5	1.0
Red clover, green.	70.8	2.1	4.4	8.1	13.5	1.1
Indian corn, green.....	73.4	1.5	2.0	6.7	15.5	0.9
Cow pea, hay, ...	10.7	7.5	16.6	20.1	42.2	2.9
Soja bean, hay	6.7	4.8	17.5	32.3	31.8	6.9
Red clover, hay.	15.3	6.2	12.3	24.8	38.1	3.3
Cow pea, seeds.....	14.8	3.2	20.8	4.1	55.7	1.4
Soja bean, seeds.....	10.8	4.7	34.0	4.8	28.8	16.9
Indian corn, seeds.....	10.6	1.5	10.3	2.2	70.0	5.0

TABLE 2.—*Composition of Different Parts of the Cow Pea.*

	Water.	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Leaves	11.05	11.24	18.84	19.74	32.48	6.71
Leaf stems	9.64	12.82	6.12	23.47	46.01	2.16
Stems.....	10.00	6.20	5.87	38.84	38.20	0.89
Peas.....	12.14	3.32	24.84	4.83	53.76	1.21
Hulls.	10.46	2.81	6.36	41.43	38.49	0.45
Roots.....1.32 per cent.	nt nitrogen	equal to	8.25	of protein.		

TABLE 3.—*Digestibility of the Varions Constituents of Cow Pea and of the Soja Bean in Comparison with of those of Indian Corn.*

	Dry matter	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Cow pea hay	59.2	45.1	64.5	42.9	70.7	50.0
Soja bean hay	....	....	76.8	54.9	52.0	71.9
Indian corn fodder.....	62.9	27.0	42.4	67.4	65.7	74.5
Cow pea ensilage	59.6	30.3	57.7	52.0	72.5	62.6
Soja bean ensilage.....	49.8	28.0	55.3	42.9	61.2	48.9
Indian corn ensilage.....	63.6	31.5	48.6	62.6	67.8	81.9

It will be noted that the peculiarities of the cow pea are, (1), its high content of water; (2), its large amount of mineral (ash) found principally in the leaves and small stems; (3), its high content of nitrogen (see protein) resident in leaves and seeds (see table 2) and the high digestibility as compared with that of Indian corn; (4), its low content of fat situated mostly in the leaves and the low degree of digestibility.

A glance at these tables will show that the valuable food constituents are chiefly in the seed and in the leaf and leaf stems. This teaches that in making hay every effort should be made to prevent the loss of leaves which easily break off in drying. Because no cheap method of harvesting the seeds has yet been discovered the crop is best used green or as hay, though it makes a good quality of ensilage.

The yield upon good soil is large, reaching as much as three tons per acre of hay, though this is extreme. As high as 35 bushels of seed have been raised, though ten to twelve are more common. The yield of both hay and seed depends largely upon the variety and the time of planting.

The cow pea has a characteristic relation to soil. Although it thrives best in good land yet it will grow and yield fairly well on land "too poor to yield anything else." It is indifferent as to sand, clay or loam, but will not endure either wet land or spring frost, though frost seems to do little damage to the mature crop.

Like clover, alfalfa, peas, and other luguminous crops the cow pea bears on its roots and so-called tubercles or nudules which, though differing in specific characters, undoubtedly perform the same office of adding somewhat to the store of soil nitrogen. Hence this crop is "good for the land" and the soil grows richer in raising it when it is either pastured off or turned under.

It greatly benefits stubborn clays when turned under both from increasing their fertility and from improving their texture. The crop does not respond to fertilizers except the phosphates, and should be employed not as a crop to be pampered and fed but rather as one to improve the land for other crops.

The sixty or more varieties of cow peas differ greatly in character of growth, in amount of vine, in yield of seed, and in the time required from seeding to maturity. Some of the smaller varieties called "bunch" varieties are entirely upright, like soja beans, others call "trailers" send out long frailing vines fifteen or twenty feet long, and still others

called "runners" send out upright stalks which afterward from extreme development resume a horizontal position. The real trailers produce a heavy growth of vine, but the crop is difficult to secure with the mower which rides over many of the lower vines leaving them attached both to the ground and to the tangled mass of vines above them. Because of this, the so-called runners are preferred as being easier to cut clean from the ground. A few varieties will live in the ground over winter in the Southern states and come up the succeeding spring. The following supposed facts will be of value to the prospective grower: (t) means trailing; (r) running; (e) erect.

Very early—Sixty to seventy days; New Era (r), Chocolate (r), Congo (r), Vacuum (r), White Giant (r).

Early—Whippoorwill (e), Red Crowder (r), Granite (r).

Medium—Coffee (e), Large Lady (r), Pony (r).

Late—Black Eye (r), Everlasting (r), White Crowder (r).

Very late—Unknown (or Wonderful) (e), Black (r), Blue Hull (r), Purple Hull Crowder (r), Clay (e), Conch (t), Gourd (r), Calico (r), Quadroon (e), Redding (r), Red Nipper (r), Speckled Crowder (.).

North Carolina prefers Unknown and Black for yield of either forage or seed. Clay for poor land and Red Nipper for dry, sandy land. Nearly all except the northern states place Unknown first and Black second for general use, that is, for both seed and vine. The Clay recommended for poor soils has much vine, but is a poor bearer. The Blue is small, with few vines, but a good bearer. Whippoorwill is an early variety of great excellence, but is a "bunch" pea with few vines.

Cow peas will grow on almost any land that is not too wet, and may be sown broadcast at the rate of one-half to two bushels per acre, using least seed with the trailing or running varieties. There may also be planted in drills of convenient distance for cultivating, planting the seeds five or six inches apart in the row, in which case a bushel of peas will plant four to six acres, according to the variety. The yield of seed will be best from drills but the culture is cheaper when sown broadcast on ground well prepared as for corn, in which case the crop now takes possession of the ground to the exclusion of weeds. In the South cow peas are frequently sown in corn at the last cultivating, and they are frequently drilled from a common wheat drill at the rate of one bushel per acre.

In general, the best time to plant is immediately after corn, though much depends on the variery, and upon the fact that late planting favors seed formation, particularly with cow peas. In all cases avoid cultivation when the vines are wet.

Seed can be purchased from any reliable seedsman, and at prices ranging from 75 cents up, according to the locality and other circumstances. Southern seedsmen seem to pay most attention to varieties.

This is written with no specific knowledge of the fitness of this crop for orchard use. Of that orchardists are better able to judge than I. It would seem, however, exceedingly well adapted to orchard cultivation and I have no doubt will prove so.

One point is urged. Each new crop requires methods of culture and of use more or less peculiar to itself. As cattle must learn to eat cow peas, but once having gotten the taste are eager for them, so we must learn how to grow them.

In attempting to grow a strange crop we have much to learn as to best varieties and best methods, and on that account do not succeed so well as with older crops with which we are better acquainted. My urgent request is to give this crop a thorough trial. Its inherent value is known, and I am satisfied that it has a place in the agriculture of Illinois. It has too many good qualities to be hastily discarded. Learn its nature and its culture and I feel sure that it will prove a valuable addition to our agricultural crops.

SOIL MANAGEMENT OF ORCHARDS.

T. J. Burrill, Dean of Horticulture, University of Illinois.

No one, I presume, can pretend to know generally how orchards should be managed to get assuredly the best results. Careful study and abundant experience may and should lead to reasonably accurate methods for any one locality and for any one set of conditions; but this may not, and probably never does, mean full expertness for other localities, or even for the same situations under changed conditions. We may indeed hear glib talk in our horticultural meetings and elsewhere about spraying and whitewashing, pruning or not pruning, high heads or low heads, high lands or low lands, fertilizing or not fertilizing, cultivation or non-cultivation, under cropping or keeping the surface bare, draining or irrigating, etc., etc., and all variously compounded and co-ordi-

nated. But when all is said and done, when can any of us affirm that we absolutely know that any one of these or other particulars is certainly to be followed with the best possible results even in one particular case? Talk is cheap. Hollow things make the most noise. Sometimes confidence runs parallel with want of real comprehension.

Still we do know that certain people are much more successful than are others, though possibly effort is not unequal. In the same way we recognize that some methods are generally more likely to win than are others, or than the want of methods. Experience, carefully interpreted, is a good teacher—the best we have. If the problem is not susceptible in any case of exact solution, an appropriate answer may be found. In what follows nothing beyond this is claimed. The writer assumes to himself in this only one merit, viz.: that of recognizing the number of elements entering into the question, and the difficulty of postively answering any one of them.

Meanwhile the subject is constantly assuming more and more importance. This seems to be especially true of the middle west. The Mississippi valley is evidently gaining in prominence as a fruit producing region over other parts of our country heretofore esteemed pre-eminent. During this last year fruit buyers from the east have turned their attention our way, and fruit barrels and packages have more than ever before drifted eastward, some reaching the shores of the Old World. There appeared in the Orange Judd Farmer of November 13, 1897, a pertinent editorial upon the topic, "Is the Apple Belt Moving West?" Here it is shown that Central and Southern Illinois, Southern Iowa, Missouri, Northern Arkansas, and Eastern Kansas comprise the great apple producing territory of America, at least for this year. It appears that only a beginning has been made in this wide area, just enough to invite public attention and to stir enterprising activity. There are great prospects ahead, and as great demauds may be expected. Reports are circulated of net gains amounting to $200 to $300 an acre from certain Illinois apple orchards, and a very large number of people have found themselves substantially paid for all outlays in planting and cultivating. With better adaptation of kinds to soils and situations, and with better care a still more satisfactory outcome is reasonably certain. The time has arrived in Illinois for the keenest investigations, the wisest experimentations and the widest feasible dissemination of accurate information upon orchard planting and management.

Judging from what we observe, the needs in these respects regarding the proper treatment of the soil, are as urgent at least as are any other parts of this business. Men preach better than they practice. They know better than they perform; but, making all allowance for this, there is conspicuously evident much use for better knowledge as well as for better proceedure. Aside from one or two experimental plats, I do not remember ever to have seen in Illinois an apple orchard that was for the year through persistently and thoroughly cultivated, nor in which there was any real substitute for this. Such a statement is by no means new before this body, nor new to the older members of this Society. Yet the condition of things at our homes, and in our respective localities, are brobably as bad this year as they were when Father Minkler and others first began to talk about the destructiveness of blue-grass and crops of small grain. A report, a good one too, of the *ad interim* committee read before the Horticultural Society of Southern Illinois at the meeting of this year, shows that in that area of the state orchards, one fairly started, have very litte cultivation on their own account. If a crop of clover or cow peas is raised it is pretty certainly carted off as hay, and $10 to $15 dollars an acre for the harvest of red top grass is too much of a temptation to resist, though robbery of the orchard trees is acknowledged. We all need, and need sadly, to learn that $15 dollars per acre income or outgo in connection with soil management is almost as nothing compared with the possible harvest from the trees in their best estate. Who would not spend twice $15 dollars per acre in soil cultivation, if by that means he could be reasonably sure of getting every other year $200, with an added possibility of doubling this amount.

For our purpose it may be said that trees, like the other forms of vegetation, require from the soil: First, a continuous and sufficient supply of water, and second, the needful mineral food substances. The natural characteristics and physical condition of different soils cause marked variation in the response of these needs. It is nowhere with us so much of a question of rainfall, as it is of conservation of moisture, and it is probably true that there is in Illinois much less of failure through an absolute want of the elements of plant food in the soil than is commonly supposed. In this latter respect the whitish clays of Marion county may be notably different from the black loams of Sangamon county, but results with the apple do not show that the latter have the advantage, not to put the case in stronger terms.

It is well-known that a considerable available supply of nitrogenous matter is essential for large development of vegetation, but it also seems to be true that too much of these nitrogenous substances is opposed to fruitfulness, and to healthfulness and hardiness. Upon land badly worn by preceding cropping, and in old orchards making an unsatisfactory growth when properly cultivated, it may be wise to dress with barnyard manure, cattle tankage, etc., otherwise it is doubtful if these fertilizers are necessary or desirable for orchards in our state. They may hasten the growth of trees into bearing size, encouraging leaf development and woody increase, but this rank growth is liable to be tender and subject to injury through the vicissitudes of climate and by parasitic fungi. A good compost heap, in which all sorts of rubbish, largely vegetable refuse of every kind from the farm, roadsides, etc., kept sufficiently wetted to cause rottinging, and prevented from leaching, would no doubt furnish a fertilizer better adapted to our Illinois apple orchards as a rule, than is manure from grain-fed animals. Such a compost heap placed where the roof water from the barn can be utilized upon it, in a shallow excavation with clay-puddled bottom, may serve the double purpose of a dumping place for otherwise useless and unsightly material, and, at the same time, become a store of valuable plant food for the more needy spots in the orchard, the places upon which green manuring is the least feasible because of slimer growth.

Possibly we shall find in widening areas advantages gained by the application of compounds of potash and phostphorus, one or both, in some form of commercial manures. But I do not know of any conclusive experiments going to show that any of these substances are worth on Illinois apple orchards more than their cost. The attemps made to test the matter at the experiment station of the University of Illinois have not furnished satisfactory favorable information, e en for the immediate locality and special soil conditions. Wood ashes are more likely to be of value and should first receive attention. These supplemented by superphosphate of lime may be found especially useful in some situations.

Whatever may be thought of the results of using barnyard manure and farm composts, in practice, especially throughout the best apple regions of our state, little can be done. If the soil needs enriching, or needs more humus to better the physical consistency, we must generally find some other way of meeting the needs. This can be done in a feasi-

ble way by plowing under green crops. Very much has been said of late in regard to the efficiency of lequminous plants as soil fertilizers, and their value for the purpose is now well recognized by up to date farmers and horticulturists. Red clover has long been used and still has a high place among these fertilizing crops, but cow peas and soja beans are now bidding for prominence. These latter, however, cannot fully take the place of the former in all cases, since they are annuals, requiring reseeding each year. On the other hand this characteristic better fits them for orchard purposes when an early affect is desired and when annual cultivation is depended upon for the best results. One of these crops occasionally grown and plowed under is the most practicable way of contributing to the fertility of the soil over large areas, such as we now have for the most part in mind. Even if the crop is mowed and carted off, the great underground growth helps somewhat in the same way. The temptation is strong to harvest the crop, but before yielding the prudent manager will study well the condition and take care that by so doing he is not despoiling himself. More often the mistake will be made on the side which seems to offer a good thing today as opposed to a probable better thing next year.

Leaving now the matter of fertility, measured by the amount present of mineral and organic substances in available condition, we turn to the other main use of the soil, that of a reservoir of water. With us this is the most important. It seems clear that apples can be grown in Illinois and grown to perfection without artificial contributions to the richness of the soil, but no crop can mature without a due supply of moisture. What the apple grower needs to guard against, above all things, are the destructive, ruinous effects of our prolonged summer drouths. A whole train of evils follow these too frequent midsummer disturbances to life and growth, besides the check at that season. Nothing so exposes trees to the winter frosts as does an August drouth followed by rain in the autumn, for then the trees go into the winter almost in the condition it normally has after vegetation has started in the spring. A tendency to blossom in the fall shows that things are radically wrong in the life processes. A second growth made by the shoots means a very poor growth. It is pretty certain too that insect and fungus pests do more damage, become more developed, in consequence of the devitalization of the trees by undue dryness in this one period of annual cycle. If we are to have thrifty, well developed, and fruitful trees, they must not seriously suffer for want of water

when, above all other times, they are in full foliage. In this connection two or three things ought to be thoroughly impressed upon the minds of all cultivators, as follows:

1. The only way trees or plants generally obtain the water they require is by absorption from the soil by their roots. None is taken by leaves from the air, even on dewey nights.

2. The amount of water required to supply fully such vegetable production as an apple tree of good size, in full leaf, is very great, surprisingly great when we consider that it must all be gathered from ground in a simply moist, not wet, state.

3. The want, whatever the amount, is a daily want. The supply must be a continuous supply. Damage may be wrought in one day that a year may not remedy.

Now we have little or no control over the rainfall. We must take the weather as it is sent to us. We must study our natural resources and make the most of them. Orchard irrigation is impracticable with us. Most fortunately we do not need it. We usually have an abundance of precipitation. It is our business to take care of it to store it up, and to have it when and where it is needed. The rain may not be well distributed over the season, it is our lookout that we secure it when it does come and keep it against a day of need. Very fortunately again this is quite within our power and also within practicable limitations. Apple trees properly cared for, will abundantly repay the costs of such care including this provision for an adequate summer supply of water. One word gives the key to the whole idea and that word is *cultivation.*

This last season I saw two orchards in Southern Illinois, only separated by a road. They were of the same kind of trees of the same age—about 16 to 18 years—and had been similarly treated until the summer of 1896. Up to that time one was no better than the other. The owners were both intelligent men and gave good attention to the trees as such attention is usually understood. No sub-crops had been raised for several years, neither had there been before the time mentioned any cultivation of the soil. Once or twice a year the grass and weeds had been cut and left upon the ground. A number of very fair crops had been gathered in favorable years and both orchards were in full fruit when I saw them the middle of September.

During the summer of 1896 one of these plats had been plowed and subsequently cultivated with a disc harrow three

or four times, and the latter implement was run during 1897 in the same way, just often enough to keep down weeds which tended to grow rank and strong. At the time of my visit this cultivated orchard was in exceedingly promising condition. The trees were in full foliage and were bending under a load of fine fruit,—not an apple sunburned, but few upon the ground. Across the road where no cultivation had been practiced, but where the weeds had been mowed as described, the trees were also full of apples, but they were comparatively a poor lot. Great numbers had fallen and were scorched on the exposed side by the sun. On the trees the same effect was often seen, the burned cheek showing that connection with the limb was not sufficient for cultivation. Many of the trees presented the strange exhibition of full fruitage without leaves. Everywhere the foliage was deficient and that still remaining on the trees was curled from the bad effects of drouth and the corrosious of parasitic fungi. I do not know what difference there was in the commercial returns, but surely there must have been enough to pay over and over again for the extra labor put upon the orchard first described, and there can scarcely be a doubt that further effort in the same direction would have been highly remunerative, even without taking into account the better condition of the trees for next year, a thing that must be considered in the ultimate reckoning.

An orchard of trees twelve years planted on the grounds of the University experiment station was, during the last season, (a notable one with us for the small rain fall during the latter half of the summer,) plowed once, in the spring, and cultivated with a disc harrow thirteen times. The surface of the soil was kept in a fine state of tilth throughout the season and no weeds were allowed to show themselves more than a few days old. In the way and under the circumstances that this work was done, the cost was $16.00 per acre. This amount is large for the work accomplished, and no doubt seems very large for one season's outlay. But there are about fifty trees to the acre. The cost therfore per tree was thirty-two cents. Did it pay?

The trees bore heavily, as full as the wood could hold up in many cases. The apples hung on and matured well, and the foliage to the very end was a delight to behold, full, clean, dark green—the type of healthfulness and luxuriance. The twig growth was good and the trees go into winter in capital shape. It may be easily true that the cultivation paid ten times over, expensive as it seemed.

In 1891, another season of deficient rainfall after the 6th of July, a single tree, winesap, was made the subject of an experiment, as follows: During the last days of June a mulch of short straw was placed around it 30 feet wide and about a foot thick when tramped down. Over this, the full width, was placed a canvas roof, painted, so as to be impervious to water. No water reached the ground thus covered after the end of June. No doubt the roots of the tree extended further than fifteen feet, but it was supposed few of them did so. Some water was of course absorbed at the edges from the uncovered area. This, however, must have been slight after the heavy rain of July 6th had soaked away, for the surrounding soil was not thoroughly wetted subsequently. The ground outside was in clover, not very thickly set. Would the amount of water, thus protected from evaporation, stored in the soil before the last days of June, serve the purposes of the tree during the remaining part of the season? This was the point of the experiment. When understood that several barrels of water a day would be given off through the leaves and could only be supplied from the earth by the absorption of the roots, a favorable prediction would have been hazardous. Yet no tree in the clover-covered area did so well as this one; and no other apples of the variety in the orchard were so large, so smooth, and so well developed in every way. The difference was marked, too much so to be mistaken. The tree evidently was abundantly supplied with water through the season.

The conclusion that can be drawn from this experiment perfectly fits with the results obtained from the cultivated orchard mentioned just before, and with those everywhere recognized after similar treatment. Tillage of itself does not add anything to the soil, as Jethro Tull, of England, so stoutly and so plausibly claimed, but a two-inch dust mulch is wonderfully effective in conserving the soil moisture. This has been often shown, too, by comparative tests made by securing samples of earth during dry times from tilled and untilled land, from subble fields, pastures, etc., at given depths and finding the percentage of water each contained. Some tests made October last, when the ground generally was exceedingly dry, give the following average results for the first nine inches of soil:

Tilled plats, bare	12 per cent.
Cornfields well cultivated	12 per cent.
Cloverfields	10 per cent.
Oat stubble	8 per cent.
Blue-grass sod, in orchard	8 per cent.

About the same proportions held good for depths from nine to eighteen inches, and with little less difference in depths from eighteen to twenty-seven inches.

This may not seem to mean any considerable difference, but plants are able to take very little water from loamy soil holding less than ten per cent. of its weight of water. They may succeed reasonably well in soil having twelve to thirteen per cent. of water and die outright when the proportion sinks below ten per cent. And really the difference is considerably in actual weight or measure. The amounts above indicated mean about 3.5 quarts to 4.8 quarts per cubic foot of earth.

An interesting item in this connection is that the earth in a well cultivated corn-field is always moist, probably as moist as the average of thoroughly tilled land without vegetation. The shade offered by the corn seems to compensate for the water that the plants themselves jump up and give off to the air. This is well shown in the results of another experiment now giving practical testimony on the University grounds. Seven years ago five plats were planted with Ben Davis apple trees, all from the same lot of stock. These different plats have been continuously managed as follows: No. 1 cultivated bare; No. 2 cropped with oats, stubble left until following spring; No. 3 cropped with corn; No. 4 in clover, cut twice a year (usually) and removed; No. 5 blue-grass sod, not usually mowed. Measurements made a few days ago gave average circumferences in inches one foot above the ground as follows: No. 1, care cultivation, 16.013; No. 2, oats, 13.750; No. 3, corn, 15.625; No. 4, clover, 14.625; No. 5, blue-grass, 8.862.

It will be noted that those in bare cultivation are the largest, those in corn next in size, then in order those in clover, oats and grass. The trunk measure of the first is twice that of the last. But these figures do not tell the whole story, the trees in the grass plat are stunted and ragged in limb and leaf, while the best are finely developed specimens, healthy and vigorous. It is too early for any considerable fruit production, but so far the trees among corn have born most apples; those in grass have not matured a single specimen.

From this evidence it would appear that a young orchard may be planted to corn if kept well cultivated without injury to the trees and that this treatment is considerably better than seeding to clover and removing the crop.

All observation and experience teaches that blue-grass, whether pastured or not, has no rightful place in an orchard,

and moisture tests of soil clearly show why this is true. Look to the pasture for the dryest earth during a drouthy summer. It is exceedingly likely to be found there.

After corn, leguminous crops (and in case of cow peas, perhaps, before corn) no doubt are best to select, if any sub-crop is best. Clover and its allies are deep-rooted plants; they do not rob the upper soil layers of water, and they do furnish desirable shade. The annual cultivation connected with crops of cow peas and soja beans is an advantage, and these crops turned under from time to time must help the physical quality of all soils deficient in organic matter. It seems to me this proceedure must be conspicuously advantageous in the great apple belt of Central and Southern Illinois, the region of light-colored soils.

Taking all things into account, the ideal soil treatment of an apple orchard in Illinois is something as follows:

On rich soils cultivate thoroughly in corn five or six years; if not rich enough for good crops of corn alternate with leguminous crops plowed under. When the trees have become too large for profitable corn growing, cultivate still more thoroughly without sub-crops of any kind, this to be continued indefinitely as long as trees make a satisfactory—perhaps we should say an excellent—growth. Turn under from time to time, if indications so dictate, a crop of clover or cow peas and follow naked culture again. Do not permit anything but fruit to leave the orchard after the trees begin to bear. Do not pasture at any time animals or if so only under the fullest consideration of the conditions and effects. More apple orchards have been practically destroyed in Illinois by this idea of dubly utilizing the lands with pasture as one of the features, than by all the parasites, fungous and insect, and all the hard winters combined. Man in this case, as in so many others, is his own worst foe. This often comes through ignorance, too often it is from over-weening greed.

One thing more and this long discussion must close. We hear it said upon every hand that cultivation must cease early in autumn or late in summer in order to let the wood properly ripen for winter. It certainly is thoroughly bad to stimulate a soft, watery growth late in the season, and this may easily be done after a mid-summer check. But does anyone know of bad results of this kind from thorough continuous culture during the whole season including the autumn months. The two cases are very different. We need not fear this autumn stimulation if there has been good, vigorous,

healthful development the whole season through. In this case there will be no tendency to autumnal blooming; there will be no soft wood, even if the leaves are fairly dragged off the trees by November frosts.

Still we must understand that the main object of cultivation has reference to the conservation of moisture in the soil and when there is no demand in this respect we may save our energies for other purposes. By all means keep up the tillage as long as the ground remains too dry for the best interests of the trees, then rest.

DISCUSSION.

MR. L. R. BRYANT—I would like to know the size of the trees you experimented with in your mulching?

PROF. BURRILL—About four inches in diameter. Mulched about fifteen feet each way.

MR. L. R. BRYANT—What time did you apply the mulch and how?

PROF. BURRILL—Last of June. The plan was to take a piece of canvas as large as they use in a greenhouse and paint it with a good linseed oil paint, slip it up against the bottom of the tree, placed in such position as to cause the water to run off.

MR. H. ANGUSTINE--Is it not a fact, in a general way, that most all the insects attack a tree because it is in a sickly, unhealty condition; that there is an unnatural growth or condition of the tree before the insect attacks it?

PROF. BURRILL—That is the case with the flat-headed borer. Some insects take the leaves off the trees anyway. Often there is some preceding damage. But the insects will sometimes damage a healthy tree. Insects, in many instances, work more upon trees when they are in bad condition.

MR. HARTWELL—Was that mulch allowed to lie on the ground? Did it eventually rot, or what was done with it?

PROF. BURRILL—It was old straw that had been put there when dry and covered up with canvas and never got wet. It was good straw at the end of the season when the canvas was taken off.

MR. HARTWELL—Is it there yet?

PROF. BURRILL—No; it was sodded over the next spring with clover.

MR. HARTWELL—What did you do with your ground afterwards?

PROF. BURRILL—We did not do anything except to experiment. The object was to try to test whether the ground when reasonably moistened in the spring of the year would hold enough moisture for the supply of the tree during the summer if it didn't get any more.

MR. HARTWELL—Do you conclude it will hold more moisture with the straw application than with thorough cultivation?

PROF. BURRILL—No, sir; but surface cultivation is not so absolute a prevention of evaporation as the canvas cover.

MR. H. AUGUSTINE—If there is one sentence in your paper that ought to be empasized more than another, and published to the world, it is "cultivate, cultivate thoroughly."

PROF. BURRILL—I heard one man say "We need to have it eternally hammered into us cultivate, cultivate, cultivate!"

MR. NELSON—In your experiments in tree planting, what is your idea as to shallow or deep planting of an orchard for apples?

PROF. BURRILL—I don't know that I have any very good answer to make to that. We are experimenting upon that now. Surely a tree needs to be planted deep enough to cause it to stand pretty well erect.

MR. NELSON—Would you attempt to hold your tree erect by planting it deep?

PROF. BURRILL—We must in part do that.

MR. NELSON—That would be the last thing I would attempt to do.

PROF. BURRILL—Do you mean you would hold it in position by means of props or ropes?

MR. NELSON—No sir; I believe after fifty years experience in tree planting, that we dig more graves for our orchard than places for them to live in by our deep tree planting. I believe there have been millions of dollars lost in Illinois by digging graves to put your trees in when you are planting

them. Deep planting is entirely contrary to the laws of nature, and I was in hopes that in such an elegant paper as that just read by Prof. Burrill he would bring out clearly the subject of deep and shallow tree planting. I hope that question will come up here before this discussion is closed. You find trees eight and nine years old looking sickly and unhealthy. In my opinion deep planting of trees invites all kinds of trouble. We must educate the people in regard to that. It is one of the most important questions for fruit growers to consider.

Mr. Hartwell—What do you call shallow planting and what deep planting?

Mr. Nelson—You must plant a tree so it can have a chance to breath. Follow the laws of nature as closely as possible and you will make no mistake. When the Good Maker of the Universe ripens the nuts on the trees and they fall to the ground, he don't send a man around with a crowbar, shovel and pick-axe to dig a hole to bury them in. No sir; they germmate on top of the ground.

Prof. Burrill—The reason I hesitated at all in answering, is that tree planting in one soil is quite a different matter from tree planting in another soil. Certainly, the practice must be different according to the soil. In some places an inch will count a good deal while in other places it will not.

Mr. Nelson—That is a fact.

Mr. Burrill—Another thing I want to say, I did not in my paper intend to take up the subject of planting of an orchard, or the preparation of the soil for the planting of an orchard. The thought I had in mind was only the treatment of the soil after the trees were in position. Certainly I would not like to have it supposed by anybody that cultivation for a few feet around the tree would answer the purpose either in prepairing the soil for planting or any subsequent operations. If anything should be interpreted from this paper which does not mean cultivating the whole surface the paper has been misinterpreted.

MR. MILLER—I know of an instance where shallow tree planting did splendidly, better than any orchard in the neighborhood. It occurred in Ohio.

MR. WALKER—How deep do you cultivate?

PROF. BURRILL—One to two inches.

MR. HOBBS—What do you think of a catch crop of beans, rye or oats, that will act as a mulch for winter, and keep the ground loose, and then turning it under in the spring?

MR. MILLER—I have planted orchards for the last forty years, and my experience leads me to say, never put small grain in orchard, especially a young orchard. It smothers the trees and they do poorly.

PROF. BURRILL—What about vermin?

MR. MILLER—Rake everything away and make it bare around the tree.

MR. BLAIR, of Missouri—I don't know much about orchards, and I came here to learn, and I rise to ask the learned gentleman who has spoken, one or two questions that concern me very much. I have an orchard in the western part of the state, in Pike county. I have read something about orchard culture in the books, and I have been told that orchards require nitrogen, potash, phosphorous, and some other things. During the last two or three years I have thought my orchard required some of these fertilizing properties, and the question I have been trying to settle in my mind is whether I should get potash in ashes, which I should be obliged to obtain from some distance and import by the car load, or whether it could be applied in the form of crude potash, at a cost of five or six cents a pound, or whether I needed any at all. So far I have had two very fine crops of apples. I don't know whether my orchard is exhausted or not. And the question I want to ask the author of the paper is, whether in his judgement and experience is it worth while to go to the expense of purchasing German Kali, which is a fertilizing material?

PROF. BURRILL—I can not answer with any great degree of confidence, but I should hate very much to advise the expenditure of one cent for these commercial fertilizers, and

would not do so until after I had tried all means at hand. I would fertilize by cultivation, plowing and putting in some crop of grain for the purposes such as we have been talking about here this afternoon. I think it is quite likely if anything is needed at all in that orchard, probably a crop of cow peas should be the first thing to think of.

MR. YOUNG—In Montgomery county, where I live, are numerous saw mills and plenty of hard wood timber. I go to those mills and procure all the ashes that they make. They burn wood, most of them. I take those ashes and fertilize my trees from the first setting up until they are twenty years old. I drive along with a wagon and two men and give about two scoopsful to a tree, and ash the surface well around the tree. Last year people asked me how it was I raised such nice Winesaps, they were very smooth and nice. I give the credit to the ashes. I think there is a fertility or something in the wood ashes that supplies the apple with what it needs. It fertilizes the tree and produces a good apple.

SECRETARY DUNLAP—What is the character of your soil Mr. Young?

MR. YOUNG—It is a clay land. Some of it is underlaid with gravel. It is not a black soil, neither is it a white soil.

MR. H. AUGUSTINE—How old is your orchard?

MR. YOUNG—One is twenty years old and from that on down to two years old.

MR. H. AUGUSTINE—I rise Mr. Chairman to make a statement to prevent anybody being misled. Something has been said here in favor of shallow planting, and not a word seems to have been said to the contrary. The ordinary planter may jump to a conclusion and plant too shallow. Before doing that, they should carefully consider the soil in which they plant, and where they plant. To plant shallow on black prairie soil I regard as a mistake. I am in favor of deeper planting. I am satisfied that the majority of our trees make roots from the scion, and in that case we can afford to plant a little deeper. A nut will make a tap root

and so will an apple seed, but when the tree is grafted or budded, that is not the case. If you plant too shallow the first thing you know the wind will blow them out of the ground, as is sometimes done in Central Illinois.

MR. L. R. BRYANT—What is your idea as to what is shallow and what is deep planting?

MR. H. AUGUSTINE—A tree in Central Illinois, Southern Illinois or Missouri should be planted not less than an inch and a half to two inches deeper than it stood in the nursery row from which it was taken. I want the bud or place of union to be at least an inch and a half to two inches below the surface of the ground.

MR. BUCKMAN—It is my impression that the roots will accommodate themselves to the way it is planted. If the tree is planted deep they will come up and find their proper place, and if planted too shallow the roots will go down and find their proper place. I remember planting some quince trees about eight inches deep and three or four years after I dug down and found the roots had come up to within three or four inches of the surface.

MR. H. AUGUSTINE—The quince root will do that but the apple root will not.

SECRETARY DUNLAP—Mr. Chairman, I want to take exception to the remarks of both gentlemen who have been talking about deep planting. I have had a little experience along that line myself, and I will give the facts and you can interpret them to suit yourselves. My place is in Central, Illinois, on the prairie soil Mr. Augustine talks about. I had set out fifty acres in apple orchards. That had been set three or four years, when a heavy storm of rain came along and it lasted three or four days accompanied by a heavy west wind, and the trees were, many of them, blown down. I straightened up those trees in good shape. The next spring I set out a twelve acre orchard of mostly Duchess trees, and I thought I would not be bothered again, and would set those trees a little deeper, thinking that I had made a mistake before by setting the trees too shallow. So I put these last trees some three to six inches deeper than they were in

nursery row, and I want to say I have been replacing that orchard ever since, by putting in new trees to take the place of those that died. The poorest success I have had was in the orchard where I planted the trees deep in the prairie soil. I think there is a limit to all things. I think the proper depth for planting is about the depth they grow in the nursery or an inch deeper. As Mr. Nelson well said "follow nature and you are all right."

Mr. Young—I think the Secretary is about right, that the trees should be planted about as deep as they were in the ground when taken from the nursery, and let nature take its course.

Mr. Pearson—Mr. President, this society is on record many times favoring pasturing hogs in the orchard, after the trees reach a size to bear fruit.

Mr. Hartwell—You may lose some of your trees. I have had several trees ruined by the hogs tearing the bark from the body.

Prof. Burrill—I believe under some circumstances hogs can be very profitably utilized in an orchard, that the fruit that falls can be utilized in that way. I am inclined to think, however, that with our modern methods for protecting apples from the codling moths, there is not the need for putting hogs in the orchards that we used to have to pick up the fallen fruit.

THE STATUS OF HORTICULTURE IN ILLINOIS.

F. L. Williams, Tamaroa.

In speaking of any of the material resources of the great state of Illinois, it would well become one of her sons to make the best showing possible, and to render praise in every instance where it can be done with due regard for the truth. Therefore, while I cannot say, as I would like to, that we grow *all* the fruits that will endure ordinary winter weather, every where in Illinois, I am glad to say that we grow all these fruits some where and, some of them, every where in the state.

The nearly four hundred miles that separates the northern from the southern limits of the state, covers quite a di-

versity of climate and soil, and consequently, various degrees of adaptability to the production of the different varieties of fruits.

The southern part of the state, familiarly known as Egypt, is pre-eminently a horticultural region, and year by year this business grows in volume, although the relative importance of the different products has, in some instances, undergone considerable change within a few years. At one time fortunes were made growing strawberries in southern Illinois Berries from that region were the first in market and sold for fancy prices. Now, the early fruit trains, that come rolling up from the south over the Illinois Central railroad, hail not from Egypt, but from Tennessee, Mississippi and Louisiana. Berries of all kinds, grapes, peaches and early vegetables are now grown in these more southern states and sent to our northern markets in advance of the same class of products from the southern part of our state. It does not follow from this, however, that the growing of early fruits and vegetables in southern Illinois is no longer profitable. Two or three weeks eating berries and other good things does not clog the appetite, nor satisfy the cravings of the inner man for a twelve-months.

Being nearer the markets and therefore able to reach them at less expense, our growers still find good profits in the business, although bonanza prices can no longer be expected. As will be shown by the figures below, the growing of berries, peaches and grapes has been largely superseded by the growing of vegetables. Of 630 cars of products shipped by the Anna Fruit Growers' Association, the past season, 443 were of vegetables, leaving but 187 of fruits. The smallest items in the list are those of the tree fruits, which are apples 25 cars and peaches 32 cars. The largest items are tomatoes, melons, cucumbers and beans, which together filled 348 cars. There were of rhubarb, onions, spinage and asparagus, 45 cars; strawberries, 80 cars; blackberries and raspberries 50 cars, and sweet potatoes 50 cars. Mr. Geo. T. Hileman, manager of the association, has informed me that good prices were received for all these products, with the exception of blackberries, these did not carry well.

At Villa Ridge, in Pulaski county, grapes have been extensively grown in the past; but the production of this fruit has been so large in New York, Ohio and elsewhere that very low prices have prevailed for the last three years, and other products have largely taken their place. Of 405 cars of fruits and vegetables shipped from Villa Ridge the past

season but 105 were of grapes. The output of grapes will likely be much farther reduced in the future. One extensive grower says he will dig out eight thousand vines this winter. The status of the business at Anna and Villa Ridge is a sample of conditions prevailing from Makanda, south, along the line of the Illinois Central railroad, through Union and Pulaski counties. From Makanda, north, very few early vegetables are grown for market, and the same may be said of small fruits until Ashley is reached, fifty miles up the line.

From the latter place, there were shipped the past season 15,000 cases of strawberries, 50 cars apples, 10 cars dried apples, 3 cars apple waste, 5,000 baskets peaches, 1,000 bushel boxes peaches, 100 barrels pears, 400 baskets grapes, 200 cases blackberries, 100 cases raspberries, and 25 cases rhubarb.

The country lying between Makanda and Ashley is well adapted to the growing of fruits; and tree planting is on the increase. Peaches are a profitable crop here, or rather would be if they could be sent to the market at less expense. When the amount of this fruit produced becomes sufficient for carload shipments better results will be likely to follow. Yet the puzzling problem is how to get small lots into the small cities and towns of the central and northern parts of the State without paying local express rates. Express charges are too high and local freight is too slow.

The growing of apples will likely be the chief reliance of the horticulturist of this region; many natural advantages will lead to this result. Although there is scarcely such a thing as a commercial orchard here that has come into hearing, there were shipped from DuQuoin, in Perry county, the past season sixty-five cars of apples, and from Tamaroa, also in Perry county, forty cars. More than one-third of these were early apples, shipped during July and August. Nice ripe apples bring high prices during these two months, but many of those shipped are green and of poor quality, so that it is really surprising that they should sell as well as they do. There were also 100,000 pounds of evaporated apples shipped from Tamaroa.

In the counties lying to the north and east of Perry the apple growing business has already assumed vast proportions. From Mt. Vernon, in Jefferson county, 30,000 barrels were shipped and the product of the county is estimated at 100,000 barrels. The orchards of Wayne, Clay, Marion and Effingham counties are famous, and no doubt deservedly so, although I can give no figures to sustain their reputation,

except that one railroad, the B. & O., reports fifty-five cars of apples shipped over their road from Fairfield, in Wayne county, and as there is another road carrying freight from this place many cars probably went that way. While the counties just mentioned have a larger acreage of orchards, which are probably better cared for than those where less attention has been given to the business, it will likely be found in the near future that a number of other counties and parts of counties are equally well adapted to the growing of apples.

One circumstance fortunate for the apple growers of Southern Illinois is the fact that the heavy crops in this region come on the off years of the New York and other eastern and northern orchards.

In giving special attention to the orchard interests of Southern Illinois I have intended in no way to detract from or underrate the merits or importance of the orchards of other parts of the State, but having less information in regard to them I should perhaps have failed to do them justice had I attempted their description.

The growing of berries and grapes to supply home markets is becoming quite general all over the State, and this is no doubt one important factor in causing the decline in prices of these fruits; both because it increases the aggregate supply, and because products that are sold in a home market pay no freight charges. This growing for home markets, however, can never be practiced to the same extent with the peach, climatic conditions being a bar to the growing of this delicious fruit in a large portion of the State. This circumstance will always insure a market within our own borders for large quantities of peaches, which Illinois growers ought to be able to supply, to the practical exclusion of those who have longer distances to ship, making it more difficult to get their fruit to market in good condition and compelling them to pay higher freight charges. Southern Illinois should also supply all deficiencies in the apple crop of other parts of the State, and no doubt will do so to a much greater extent than now, when our growers learn to care for their orchards in a thorough and systematic way, handle their apples carefully, grade them closely and pack them honestly. In this way we will not only hold the markets of our own State, but will find an easy entrance into the markets of the world. Most of the 100,000 pounds of evaporated apples shipped from the little town of Tamaroa the past season were destined for exportation, and I hope yet to see whole train loads of our finest winter apples depart for the same destination.

I believe the growing of apples is destined to become one of the great industries of our State. I know the possibilities wrapped up in the soil of the apple belt are almost beyond computation and that many generations of men yet unborn will find these treasures unexhausted.

COMMITTEES APPOINTED.

PRESIDENT GOODRICH—We have placed a question box in charge of Mr. Barnard, and if any of you have any questions you would like answered, you will place then in the hands of Mr. Barnard. He can well submit them to the convention.

Before adjourning the chair will announce the following committees:

Committee on Obituary—O. W. Barnard, Miss Emily Riehl.

Committee on President's Address—H. Augustine.

Committee on Missouri Fruit—E. A. Riehl, L. R. Bryant.

Committee on Secretary's and Treasurer's Report—Dwight Herrick, Frank Reihl.

Committee on Fruit Exhibit, Class 2, Northern Illinois—Arthur Bryant, J. V. Cotta.

Committee on Fruit Exhibit, Class 3, Central Illinois—George Foster, Mr. Hobbs, Ind. del.

Committee on Fruit Exhibit, Class 4. Southern I linois—John M. Pearson, J. W. Stanton, Mr. Nelson, Mo. del.

Committee on Pears and Grapes, Class 5—L. M. Beal, F. D. Voris.

Commfttee on Vegetables, Class 6—J. L. Hartwell, H. M. Miller.

J. L. HARTWELL—I move that a committee of three be appointed by the chair to confer with the State Teachers Association with regard to propriety of teaching horticulture in connection with botany in our public schools.

The motion was seconded and on being put by the chair was carried unanimously.

PRESIDENT GOODRICH—The chair will appoint Mr. J. L. Hartwell as chairman of that committee, H. M. Miller and Jno. M. Pearson as members to act on said committee.

The convention adjourned until 7:30 P. M.

TUESDAY EVENING SESSION.

The convention met at 7:30 P. M., President Goodrich in the chair.

WHERE, WHEN AND HOW TO PLANT AND CARE FOR ORNAMENTAL TREES AND SHRUBS.

JNO. M. PEARSON, Godfrey

MR. PRESIDENT—The limits of my subject forbid any discussion of varieties. "Where? When and How?" are the only questions asked. No one seemed to ask "What?" It may well be presumed that every one knows how to plant, or, perhaps, he is willing to accept the fiat of the Almighty, who "saw everything that he had made. Behold, it was very good." If both these assumptions are wrong the first true peddler you meet will be crammed full of knowledge which he will readily impart, for a valued consideration, an order.

First then, "When?" The only answer to this must be, "Everywhere."

If you have a spot of this green earth that you can control, whether it be broad acres or only a shovelful of soil in a box on a window sill, plant, plant for ornament and beauty. Plenty of the vulgar crowd will plant for food and profit, let it be ours to plant to please the eye and to remind us all of that beautiful garden where our first parants lived, close to nature and close to God. So much for general orders, now for particulars. These take shape very much like the anxious mother's entreaties to her boy, and begin with "Don't." Don't plant a forest tree in a tub. It will not be well for the tree, nor for the tub, nor for you. Now this injunction implies, like the ancient decalogue a "required and a forbidden." Those few of us who were so fortunate in early life as to have been taught the assembly's shorter catechism, will understand this. For the benefit of the more numerous class, I will say that it includes the whole question of adaptation of plant to plantation. The size of your spot of earth must determine what shall grow thereon. In cities where the soil is full of the poisonous gases from leaky mains, and the air is full of grimy soot, but few trees will do their best. Shrubs do better, because their roots are shorter and we can better provide for them. Before planting look around you and note the trees that have done best and then select those.

In the country, plant along the highways. I am aware that here we may find those who differ from us, and some good reasons are given for the difference, but, for-all-in-all, I do not hesitate to say, plant along the highways, in the road, if the reserved footpaths are maintained, if not, plant just within your own line, plant here our biggest trees; you may not, probably will not live to see them in their prime, but some one will bless you for it. Plant trees around your dwellings, but not too near. Remember that they grow while you sleep, and good judgment, in the start, will prevent fruitless wishes in years to come. Plant so as to preserve an outlook for yourself when the trees are grown, and for this purpose you may use similar trees. No country place is complete without an assortment of shrubs, use them to conceal what you wish to conceal and to adorn every place where they grow. Mr. Mechan tells us that, with care, in our latitude, we may have shrubs in bloom every month of the year. I, myself, have proved this with only one exception. Our cemeteries offer and demand attention from the ormental planter.

A wide field is here open for cultivation, both as to varieties and methods. John Burrough's gospel of tree and green grass needs to preach right here. In these places where we lay away our loved ones, and where we ourselves must sometime lie, let there be more of beautiful nature's renewing life, and less of man's decaying work. If there be any other place, not included in the above, I pray you add to the list each and every such place where the eye of man may linger and feast.

"When to plant?" Plant in the fall always, excepting evergreens. The reasons for this have been given over and over again, in our published proceedings. Thirty years ago it was, among Horticulturists, a mooted question, but now, in this state, general belief and practice has conformed to this rule. At the same time do not be deterred from planting because this season has passed. A careful plantation will meet small loss in setting out good stock in the spring. I myself have successfully transplanted trees and shrubs in every month of the year which goes to prove the Scriptural rule that "now is the accepted time."

"How to plant and care for these beautiful things." This, for the majority of us, means, how to transplant, for it is given to only a few to plant the little seeds in the ground and have a nursery of our own. Our ornamented trees and shurbs come either from the wild woods or from the professional nursery man. With-

out hesitation, I prefer the latter, and of late years there has been no reason to complain of either the supply, or the price. If the stock is properly handled, there will be but little loss and less in the nursery grown stock than in that taken from the woods. Then again, subsequent growth is more satisfactory. From my own experience in selecting stock and transplanting, I have aimed to look mainly to the condition of the roots, that is to say, have the roots been kept moist since their removal from the nursery?

I am more particular about this than about the quantity of roots, or their character. Fibrous roots are always found on some varieties and upon others rarely. If I find the roots to be short, I have a remedy in cutting back the top, but, if I find them to be dried, I know of no satisfactory remedy. Setting in the ground is not different from that so often described at our meetings for any kind of tree. I always set a little deeper than they appear to have stood before and get the soil firmly packed among the roots, which should be spread out as far as they will admit. If planted in the fall, raise a little mound around the stem. There is this difference, however, to be observed.

In planting an orchard we have always recommended cultivation for a few years at least, but, in ornamental planting, for the most part, this cannot be done.

We must, in some way, accomplish this same result. The soil around the roots must be kept moist, and far from other vegetation, and must not be allowed to bake and harden in the heat of midsummer. We know at present but one way to accomplish this, but that one way is enough. We can do it by mulching, and of all things that we do, or do not do, this is the most important for success. Originally this meant to cover the ground around plants with "either manure, straw or any light substance." The object was and is to afford protection by preventing rapid evaporation. But we know today that many other substances will effect this. A very intelligent friend assures me that if he had his choice and was not deterred by cost he would prefer thick plank for mulch. Flat stones have also been used where convenient. Our commonest, cheapest substance is straw. Use it very freely and in some way prevent it from washing, or blowing away. Do not wait until drouth comes, but make the mulching part of the planting.

An objection is often made that such piles are unsightly, but our answer would be that they are indeed beautiful, com-

pared with dead plants, and to an intelligent eye they show human care, which is always pleasant to observe.

Nothing much remains to be done for awhile, except to enjoy the new growth. This is no small joy, for all true lovers of trees and flowers much prefer to watch their pits and note their growth than to buy a lawn "ready made".

By-and-by we shall need to prune. This to is done by nature, in a rough way. Ours is "an art that doth mend nature". In dense woodlands and thick shruberies, the "law of survival" ruthlessly kills the weakest, but we are trying to better that. We do not plant dense groves and wait long years for nature to kill out the weakest, but we want the same strong, tall boles that nature gives us after a century. So we must shade our trees, while young and encourage growth in proper direction, avoiding all bad forks that would eventually split the trunks, removing them before they become large enough to either dwarf the tree, or check the growth when removed. For the following shrubs, remember that the fall sprays of blossoms only come from healthy young shoots, therefore cut out all old wood, and so get better growth of the new. I cannot close this without a favorable word for our hardy climbing vines. Do not allow them to grow upon the walls of your dwellings, but when your trees have become strong, use their trunks for the supports and the vines will adorn the support.

P. S.—Since writing the above I notice that the printed programme has changed my subject a little and so "What" to plant is added to "Where and When and How". But we have a stenographer, and I prefer to give my choice of varieties in answer to questions, if any are interested enough to ask them.

DISCUSSION.

Secretary Dunlap—I would like to ask Mr. Pearson if he would plant fruit trees along the highway, and if so, what kind?

Mr. Pearson—No sir, I would not. Our children are not educated up yet to that high moral point. I do not believe in throwing temptation before infirm creatures. I understand they do that in civilized countries like Russia. I wish we could do it here, but I don't want to expose the children of my neighborhood to any such temptation. A fruit tree does not make an ornamental tree for two reasons. In the

first place you can't help thinking of the fruit—that don't belong to ornament. The moment you think of it as a fruit tree you destroy the thing as a thing of beauty. We want something for ornament that will be purely for the eye.

SECRETARY DUNLAP—Would you exclude nut-bearing trees?

MR. PEARSON—No, I would not, because the only nut-bearing trees we have that amount to anything are also very useful for shade. The chestnut, if we could make it grow, makes a fine ornamental tree, but the hickory does not, nor the black walnut, nor the pecan. They are not really ornamental trees. It has been said that our oaks don't make good ornamental trees. I can show some oak trees within a mile of my gate that are just as beautiful trees as a man need look at, a hundred years old, I have no doubt, eighteen to twenty inches in diameter. If you plant oak trees you must expect somebody else to enjoy them.

MR. H. AUGUSTINE—Where a man has a large lawn of an acre or two in front of his house would you object to his planting nice cherry trees or Whitney crab apple trees or something of that kind?

MR. PEARSON—Some of the crabs are pretty nearly worthless, and would not do for anything else, consequently would come within my idea of a purely ornamental tree. Our own wild crabs are beautiful for that purpose.

It may look as if it was a waste of time, land and money to plant ornamental trees on a farm, but when you want to sell your place you will find that those trees will be just as valuable to your place as any other tree you can set out. Purchasers are willing to pay for them if they have been set out in good shape, but let them be entirely for the looks of the premises. Consequently I would not plant fruit-bearing trees, and I would prefer not to set nut-bearing trees for ornamental purposes, with a very few exceptions.

MR. JOHNSON—Would it not be a good plan to plant a few of these crabapple trees on the outside so as to keep the boys out of mischief?

Mr. Pearson—The boys in our town are too sharp to be fooled that way. They will soon find where the good apples are.

Mr. H. Augustine—Would you plant any evergreen trees?

Mr. Pearson—Yes. First and foremost, and above all, the hemlock. I think more of it than any other evergreen I have on my place, and it is twenty years old.

Mr. H. Augustine—It will leave you in five years if it is twenty years old now.

Mr. Pearson—There are some at Jefferson Barrack, Mo., fifty years old.

Mr. Miller—The Austrian pine is a very good ornamental tree, but don't forget the white birch. It is as pretty a tree as you can set out. Nothing ever known will surpass it in beauty.

Mr. Pearson—The elm is a fine tree, and next to that comes the hard maple, then I don't know what would be next for a large tree.

Sec'y Dunlap—I notice Mr. Pearson in his paper has admitted there are a good many objections to planting trees along highways—at least that a good many object to it. I agree with him, however, in that I believe trees can be planted along the highways, but with some limitations.

Trees can be planted along the west side of our highways without detriment. The highways in this country are usually laid out on section lines, east and west and north and south. There can be no valid objection to planting trees on the west side of highways. It certainly is a splendid thing to do. It shades the road in the afternoon, after the trees have attained sufficient height, all the way from 2 o'clock until sunset. They afford a delightful shade during the summer months. I have known people in my own country who would go a long distance out of their way in order to get on a road shaded with trees that they might enjoy the shade.

On our prairie soil if set on the east side of a highway they are apt to cause bad roads, unless considerable space is left between the trees in order that the sun's rays may shine

upon the road to some extent. The trees should be kept well trimmed. so that there shall be free circulation of air and to give the roads a chance to dry. On the north side of the road they can be set for ornament, and that is the only thing they can be used for there. On the south side of the road the same modification would apply as on the east side. They ought to be set a wide distance apart. I should say not closer, under any circumstances, than six rods. I do not exactly agree with Mr. Pearson. I think we ought to plant nut-bearing trees along the highways.

MR. PEARSON—I do, too; but they should be planted for ornament.

SEC'Y DUNLAP—I think a very nice way would be to plant some spreading trees, and alternate with upright growers: that it would produce a very nice effect. Such trees as the beach, the butternut and the walnut. I don't know anything about the pecan, because we have none of them in our part of the State. I don't know whether they would grow on a dry soil or not. I think the pecan is a very pretty tree. In many places we could plant nut-bearing trees, which would be very desirable for the children. If I were going to plant fruit trees along highways I should want to plant something hardy, and not affected by the weather to any great extent, especially in Northern and Central Illinois. Because if there is anything that does look ragged and bad it is a decrepit apple tree—one that is just about half way over the road to the wood pile. I agree with Mr. Pearson that it is very questionable whether they ought to be set along the highways. So far as the children are concerned I see no harm that could result from setting apple trees along the highways. Let the children have all the fruit that grows on such trees.

H. AUGUSTINE—Mr. Pearson speaks in his paper about planting trees in the fall. I cannot agree with him on that for Central Illinois. I think a man who plants trees at any point north of this latitude in the fall, of any variety, makes a mistake. Especially is this true of fruit trees of all varieties. The peach trees would be sure to die, and other trees would suffer. I believe we ought to plant early in the spring.

If I were living on a farm away from a nursery, I would get my trees in the fall of the year and bury them two feet deep, and let them remain buried until February or March, when I would plant them if the ground had thawed out sufficiently to enable me to do so. Success is sure if you plant in that way.

Mr. Miller—I had an idea the box elder was one of the nicest trees to plant, and I had some of them set out. Just as soon as they got large enough to scatter their seed my place was literally covered with young trees coming up, and I found them a great nuisance. I won't have a box elder on my place now.

Mr. Pearson—No, neither will I.

Mr. Miller—A few years ago a great hue and cry was raised about the "Tree of Heaven." I would not have it. It is fearful. Its odor is offensive and it ought to be named the tree of that other place—not heaven.

The chestnut is a nice tree. I had about four hundred of them shipped to me from Ohio about thirty-five or forty years ago. They are not exactly hardy. They make a very good shade.

Talking about ashes as a fertilizer. That has gone out of date. But ashes mixed with hen manure makes one of the finest kind of fertilizers.

Mr. Barnard—I am not in favor of planting trees along the highways to any great extent.

Mr. Hartwell—Is there any difference between the hard maple and the Norway maple?

Mr. Pearson—There is a good deal of difference. If you cannot get the rock maple get the Norway maple.

Mr. Hartwell—Does not the Norway maple grow much more rapidly?

Mr. Pearson—Most assuredly.

Mr. H. Augustine—In my judgment our American white elm for all purposes is the finest tree we have in America. It is a very regular, large, fine spreading forest tree. The hard maple is all right, but is a little too dense in shade for ordinary purposes, and it don't live as long as the white elm.

MR. J. V. COTTA—The elm is a beautiful tree, I would favor planting them.

MR. PERIAM—For a large tree I think the American bass wood is a very desirable tree, and for a small tree I prefer the Kentucky coffee tree. I know nothing better except elms. Elms do well in Chicago. If you are only going to plant one tree the birch is the tree of all trees.

MR. YOUNG—Among all the trees that grow there is no tree that gives me so much pleasure as the sugar maples. And they present a most beautiful sight in the fall of the year. The bass wood comes next. White ash would be my preference for foliage.

MR. A. M. AUGUSTINE—I want to mention the tulip tree. There is no more beautiful or unique tree in our forests, and it certainly makes a fine lawn tree.

MR. L. R. BRYANT—It is a nice tree, and is hardy as far north as Princeton. It is a magnificent tree. I will say I would hate to see it go out as the sentiment of this society that we do not favor planting street trees. We should plant forest trees and keep them well trimmed to a proper heighth, and not too close together, forty or fifty feet apart, and I do not believe that they will affect the roads unfavorably.

MR. H. AUGUSTINE—For Central Illinois I think the tulip tree is a little too tender.

SEC'Y. DUNLAP—I want to call attention to one of the newest trees. I hardly know whether to speak of it as a dwarf tree or not. It does not grow very high, but spreads out well at the top. It is in the Experiment Station on my place. It has been there some six years. It is called the *Catalpa Bungii*. It is top worked like Kelmarnock willow. The foliage is very dense and you can almost cut the shade with a knife in the summer time, when the weather is real hot. The foliage underneath is as green as it is on top. The leaves seem to lie in layers, one above the other. The top is umbrella shape.

MR. JOHNSON—We have one and sometimes call it the umbrella tree.

Sec'y. Dunlap—I would like to find out if any one here has had any lengthy experience with that variety. If that tree is a hardy tree it is a very ornamental tree for a lawn.

Mr. Johnson—I have one of those trees. It has been growing now eight or ten years, and we are very much pleased with it. It is small. It is not very dissimilar to an umbrella. It is probably not more than ten feet in height, and has a body that is several inches in circumference. It looks to be perfectly hardy. The Juneberry tree does admirably on the lawn. It has a beautiful smooth bark, fine branches, an upright grower and seems perfectly hardy. It gives us the very first blossom we get in the spring. It is as white as a snow ball almost. It does not last very long. But the whole character of the tree is quite satisfactory to me. I can't help thinking we have fruit trees that are also ornamental. Take Whitney's number twenty crab, I planted it and was very much pleased with it. I can admire fruit as well as I can foliage. It seems to me a tree in fruitage is a beautiful thing.

The Chairman—We will now listen to an address illustrated by stereoptican by R. Morrell, President of the Michigan Horticultural Society on "The Systematic Pruning of Orchard."

Mr. Morrell entertained the audience at length with an illustrated lecture on the subject above indicated, at the conclusion of which the convention adjourned.

[Through the courtesy of Secretary Edwy C. Reid, of the Michigan Horticultural Society I am able through advance sheets of their report and cuts illustrating same to print Mr. Morrells address. Secretary.]

PRUNING THE PEACH.

R. Morrell, President Michigan Horticultural Society, Benton Harbor, Michigan.

In presenting my practice or system of pruning the peach I do not make the claim that it can not be improved upon or that it is entirely original, but that the plans described and illustrated are the best I have ever seen

put into practice, and I believe are now quite generally followed by the most expert growers in the country. I am fully aware that the plan is indorsed by some growers but for some reason it is not put into practice by them; so I will furnish you photographic illustrations from my own orchards, showing exactly how I treat my entire orchard of nearly 100 acres.

In order to fully understand just what treatment is best for any named species of fruit, we must first understand its habits, peculiarities, and requirements, all of which may be varied by local conditions of soil, climate, exposure, etc. These matters each grower must study for himself.

The most prominent peculiarity of the peach is that, under favorable conditions, it makes a much greater growth of top than the root can possibly maintain in full vigor, especially during its first fruiting years; so we practice pruning, with the following subjects in view:

1. Symmetry and proper balance between root and top.
2. The preservation of the vigor and fruiting powers of the tree.
3. The proper thining of the fruit at the best possible time.

I presume it is well to state right here that the plan I am about to present can not be followed by every peach-grower unless the majority of them reform their present method of cultivation and fertilization. I call your attention to this matter because proper pruning, or pruning on these lines, is only of value to the grower who is thorough in all the details of orchard culture.

When peach trees are placed on good soil and given good culture they are probably the most satisfactory growers of any of the tree fruits; but experience has proven that they will invariably establish too many limbs, and in case of the free-breeding varieties will set altogether too many buds—and here is where the skilled grower must step in and use his brains and his shears. If he does not, the tree will attempt to grow, perhaps, ten times as many peaches as the root systems can sustain or mature properly. The result is that you have a very unsatisfactory crop of peaches; the tree is left in an exhausted condition; it can not establish a crop of sound, strong buds for next year's crop, nor can it properly mature all its wood. The next spring you find your tops filled with dead, small limbs, and the trees fail to produce, or perhaps produce a crop of poor, woolly peaches, devoid of flavor or color, which sell slowly at cheap prices,

and this same routine is followed year after year until the grower finds that when he should have an orchard just in its prime he has instead a prematurely aged, broken, and delapidated one.

All this might be changed for the better, and at a nominal expense, if we begin with the setting of the tree to follow well-defined plans laid on proper lines, and follow them thoroughly and on time, year after year, with or without a crop.

In hope of explaining more clearly what I consider proper methods of pruning, I will now show photographs taken in my own orchards, and invite your criticism as we take up each picture.

You will notice, as each picture is thrown upon the screen, that somewhere on it is a figure showing the year in which each tree was set, and all the photographs being taken in October, 1896, you can readily figure the age of the tree. Also, in each picture, you will find a man six feet tall, and the step-ladder in use is a six-foot one. From these you can judge the dimensions of trees if I fail to give the same.

Bearing this in mind, permit me to explain photograph No. 1. This tree is one in a block of 5,000 set in the spring of 1896, all third-grade trees, eighteen inches to two feet high, but carefully handled and vitality kept uninjured. You will see that the limbs start about knee high to a man, and on October 1 the top is as high as his head. You will notice also that the tree as trimmed is only waist high, with five main limbs saved, which I think is really one too many for ideal shape; but, of course, you all know that it is impossible to make hard and fast rules for work of this character.

We will now move on to photograph No. 2, taken from a one-year tree but bearing its second year's wood. Unfortunately all these trees were trimmed before we got around to take the photographs, so I can only show you the tree after pruning. This tree, you will notice was started with crotch about eighteen inches high, trimmed and cut back at one year, leaving only three branches, they in turn producing three to four strong limbs, which you see cut back, not quite so harshly as I would have done it myself, but done by my foreman, but on the whole quite a symmetrical tree for a two-year-old. You will observe that it is, after pruning, about nine feet high, and spreads eleven feet. The companion tree in the picture is a four-year Lombard plum which has been treated just the same as the peach. You can see

just where it has been cut back each year, and as it stands, is trimmed ready for next crop. This tree, as you can see, is thirteen feet wide and spreads fourteen feet. We find that, even under this system of pruning, the plum, except in the case of Burbank, maintains its upright habit; while I think the peach, under this treatment, shows a decided tendency to spread its branches out of proportion to its height.

The third photograph shows a tree of Lewis peach before and after pruning. You will see that before pruning it stood fourteen feet high, with the current season's growth measuring as much as six feet, and, being a young, vigorous tree, it has many small side-branches. Now, imagine the results of all these small branches to remain, loaded as they are with fruit buds. It would mean that, if the winter is favorable, this tree would set twenty or more times as many peaches as would be required for a full crop. Note carefully how we have trimmed this tree. We show the first motion in this kind of trimming. Go on the ladder and cut back all leading growths one-half to two-thirds; then thin out the smaller bearing branches as you see. Now, if all the buds left survive the winter we will pick off more peaches than we leave on when thinning next June. This tree, or rather this block of 500 Lewis, averaged a little over one-half bushel of fine peaches per tree in 1896, and was set in April, 1894.

Our next picture, No. 4, shows a tree set in the spring of 1893, which has borne two full crops of fruit. It is of more spreading habit than the preceding one, but you will observe the same general lines of trimming. At this age you will begin to observe one of the strong points in this system of pruning; *i. e.*, the noticeable thickening and stocking of body and main branches, and the large, strong formation of the crotches. These trees seldom or never split down, no matter how heavily loaded, and I never have a prop in my orchards.

Our next picture, No. 5, shows you a Burbank plum under same treatment, which I find just as desirable in plum culture as in peach.

These samples are, no doubt, enough to impress you with the plan or system of pruning which I practice and advocate; and I will now show you some views in this same orchard in full leaf, that you may more fully see the results.

Cut No. 6, shows a general view of an eight-year-old orchard that has been pruned according to the plan detailed here. Notice where the growth was cut last spring, and see the amount of new growth following an enormous crop of fruit. This orchard has ten acres and has produced six full

crops, and has made a net profit of over $1,100 per acre during that time, or a little better than $137 per acre per annum.

If you have observed carefully you have noticed that these orchards have had absolutely clean, level culture; but one help they have had that you could not see, and that is, liberal dressings of wood ashes and bone. I have talked to you entirely on pruning, but I hope no man will carry the idea away with him that pruning is alone responsible for the fine specimens I have shown you, as it is really only one of several details of care that are needed, as a whole, to grow a really first-class orchard.

I have given you exact measurements in several instances, for two purposes: (1) to demonstrate that pruning, on the lines laid down, stocks and strengthens a tree; and (2) to give you an opportunity to measure what you consider good trees of the same age, for comparison.

My excuse for offering you this lecture is that I firmly believe that in view of the enormous planting of peach trees making in all the peach regions of the United States, the brutal law of survival of the fittest must soon be put into operation, when I would like to see our own state come up smiling with model orchards and men who understand the care and handling of fine peaches so well that they can still find profits even after their less intelligent or less industrious neighbors are swept out of competition by their own negligence or the hand of providence.

Now let me sum up what I think are essential requirements for successful peach culture.

1. Proper soil and location.
2. Thorough culture, with very little cropping with other crops.
3. Liberal fertilization with proper fertilizers, viz.: phosphoric acid and potash.
4. Careful pruning as detailed, always done when growth is dormant.
5. Careful thinning when crop sets too heavily.
6. A man who is intelligent, industrious and progressive; an honest man, who has the moral courage to follow the golden rule during peach harvest.

Of such material must the winner be.

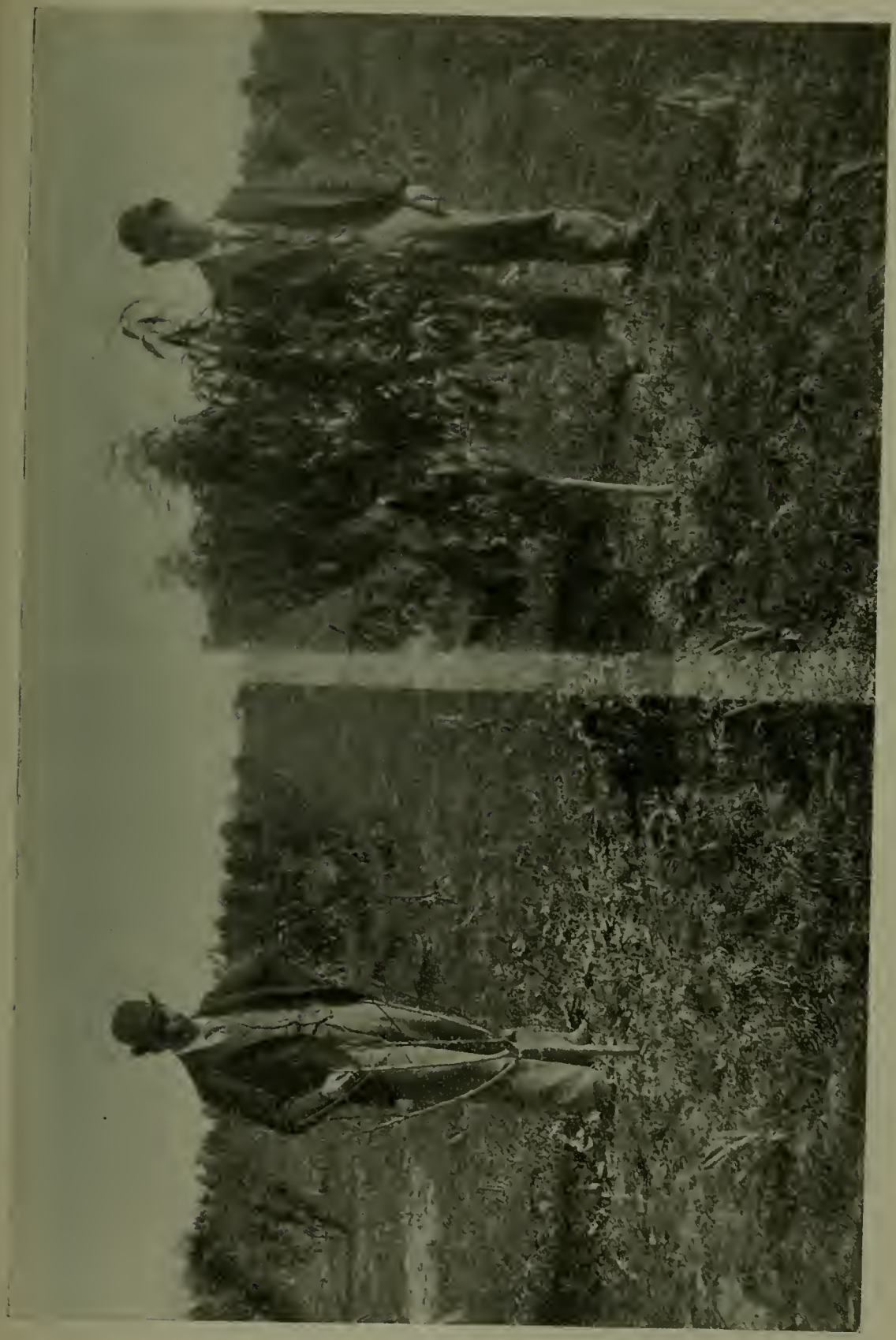


FIG. 1.—Tree Set April, 1896, trimmed September, 1896.

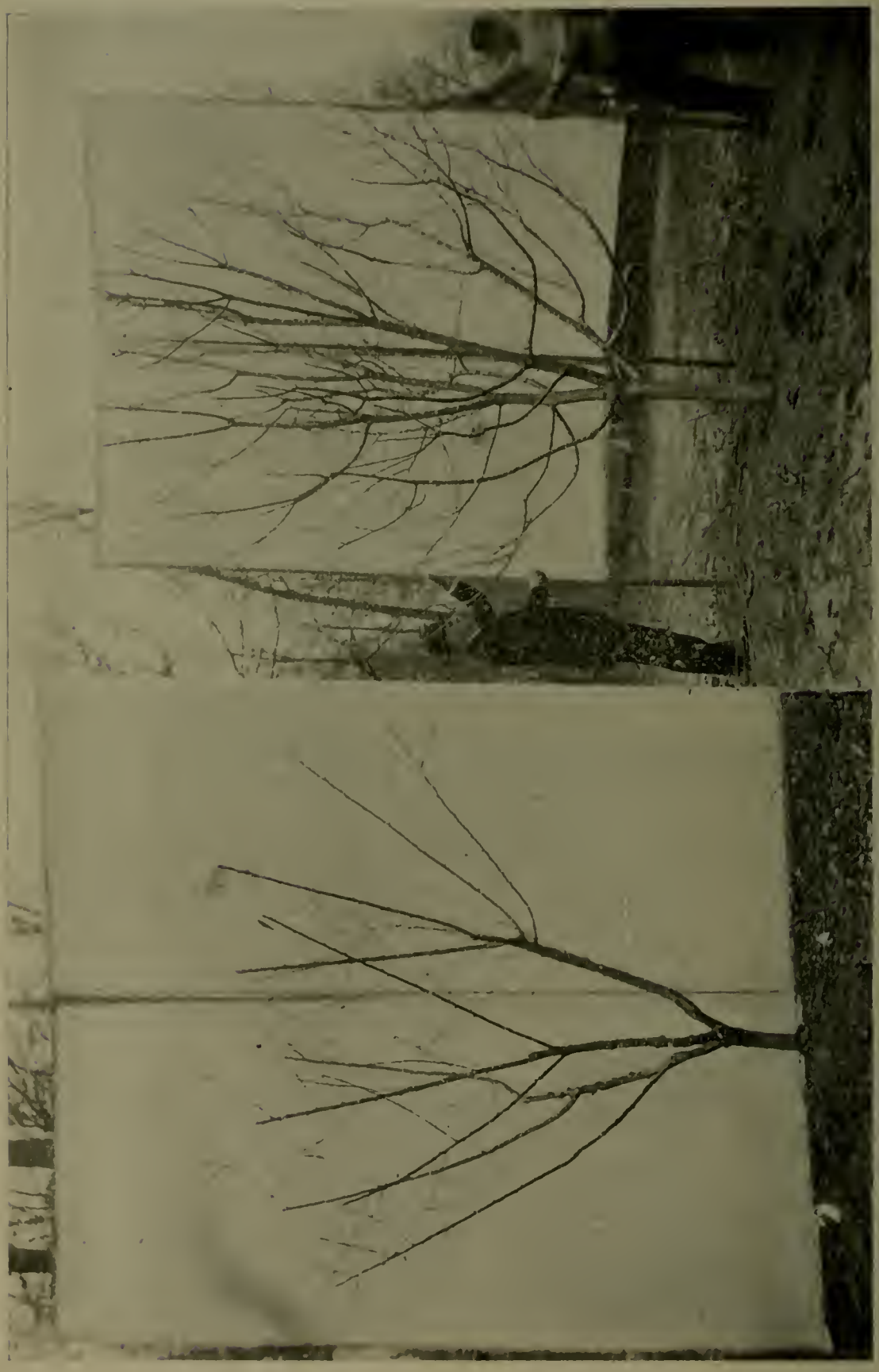


FIG. 2.—Peach, set 1895, photographed October, 1896, after trimming. Lombard plum, set 1892, photographed October, 1896, after trimming.

FIG 3.—Peach set Spring of 1894. Photographed October, 1896. Before and after pruning.

FIG. 4.—Three-year-old peach, before and after pruning.

FIG. 5.—Four-year-old Burbank plum before and after pruning. Has borne two full crops.

Fig. 12.—Eight-year-old peach orchard, showing regular annual pruning since one year old. Has borne six full crops requiring thinning.

WEDNESDAY MORNING SESSION.

Convention met pursuant to adjournment at 9:30 A. M. President Goodrich in the chair.

The session opened with prayer by Dr. Howe, of Springfield, Ill.

PRESIDENT GOODRICH—Before we take up the next topic I would inquire whether there are any committees ready to report?

Mr. Bryant, chairman of the committee on Missouri apples, reported as follows:

Your committee to report on the collection of Missouri apples exhibited by A. Nelson, delegate from Missouri, would report that we find a very fine collection, numbering twenty-eight varieties, all smooth and highly colored. Amongst those which especially attracted our attention were the Ingram, a seedling of the Janet. They were highly colored, similar in quality, but not so juicy. Better tree than the parent bearing the fruit singly, rather than in clusters. Said to be an excellent bearer and being largely planted in Missouri.

Fullerton—Sweet, of fine flavor, season about same as Ben Davis. Said to be a good bearer, upright grower.

Nixon—A large, clear yellow apple, subacid, fine grained, very good in quality. Said to be a good keeper and heavy bearer.

Arkansas Black—Said to be as good a bearer as the Winesap.

York Imperial—Regarded by the Missouri growers as one of the coming apples and is being extensively planted.

Robinson Pippen—Very large in size, yellow color, very mild, subacid, fine grained. Said to be a good bearer and tree a fine grower.

Seedling of Janet—Has some characteristics of its parent, but probably larger in size. Good quality, promising, worthy of trial.

E. A. RIEHL,
L. R. BRYANT,
Committee.

Committee on Class 5—Pears and Grapes—reported through its chairman as follows:

Best collection pears—C. H. Webster.

Best plate Winter Nellis—C. H. Webster.

KEIFFER PEAR.

First premium—E. A. Riehl.

Second premium—L. F. Dintleman.

Six plates of Quinces, five varieties, for which there is no premium offered, the committee recommend that the usual premium be allowed.

L. N. Beal,
F. D. Voris,
H. Aldridge,
Committee.

Which report, on motion, was adopted.

SMALL FRUIT CULTURE BY THE FARMER.

L. N. Beal, Mt. Vernon.

Mr. President:

People in the towns and cities generally suppose the farmers are well supplied with all kinds of fruit. But this is not the case, and in writing on this subject I take the position that every farmer should raise all the fruit his family needs, although it is against the advice of many writers on this subject who claims the general farmer can buy his supply of fruit cheaper than to raise it. I admit that it does not cost much to supply the average farmer's table with fruit the way it is supplied, for the supply is either very limited or they do without. It has been estimated that only one farmer in seventy is supplied with fruit for his family. Any one who will note the fact while traveling over our country, will observe the absence of fruit gardens on the farm, and, if he has occasion to dine with the farmer, he will also note the absence of fruit most of the time. It is not unusual to see, on a hot July day, the wives and daughters of well-to-do farmers foraging along the thickets and roadside fences for a few blackberries for the family, not only for present use but also to can a few for company.

The wives and daughters of farmers who raise hundreds of bushels of corn, wheat and oats, ought not to be com-

pelled to get their fruit out of the fence corners and highways when it can be grown as cheaply, easily and almost surely, bushel for bushel, as corn or wheat. Besides, with the low price of farm products, I do not believe he can afford to spend his hard earned dimes for something he thinks he can do without. So if he has fruit he must produce it on the farm or the supply will be very short. I know farmers generally think they can buy fruit cheaper than they can raise it. I have had farmers of central Illinois to tell me that they could sell corn, from one to two acres, and buy all the fruit their families could use. But do they do it, even if their statement is true? This corn money does not burden the farmer's pocket when fruit is ripe. I know, in my section of the state, the supply purchased by the farmers' wives—for it is generally the women who do the buying—is governed by the amount of money they have. They have earned this money from the sale of butter, eggs and poultry, and it has not been given them by the farmer "who can buy fruit cheaper than he can raise it" This is no idle tale, for I sell fruit to farmers every year, and there is no use of the farmer fooling his wife into the belief that he will buy all the fruit they need. Mr. Hale, the great peach grower, has said: "No man should fool himself into telling his wife, that he has no time to bother with such small trash as berries, but will buy all the family wants. He may not be much of a liar, but those of us who have so often heard that old chestnut about buying all the berries the family want, know that man is way off. He never did, and never will buy one-tenth part as many berries as his family will consume, if he will give them all they can wallow in, fresh from the home garden."

Who can blame the boys for getting sick of the farm and crowding into the cities and towns? There is too much work, work, work, and pork, pork, pork, from one year's end to the other.

How it would astonish these boys, if instead of the pork so often set before them, they would see a heaping dish of strawberries, raspberries or blackberries. They never would forget it as long as they would live, and they would think a farmer's life would be worth living.

There must be a reason why a farmer neglects the fruit. One reason is they seem to think there is some mystery in fruit growing. Another trouble is to get the right kinds. With the average farmer a strawberry is a strawberry, a grape is a grape and a plum is a plum. He knows nothing about varieties. If he has formerly tried to grow fruit he

bought from some smooth-tongued agent, who sold him something very fine, something better than his neighbors ever had. Some grape vine raspberry grafted upon a honeysuckle which would run clear round the garden on the top of the fence, and begin bearing in the spring on one side of the garden and keep on bearing around all summer till stopped by the frost in the fall, and many other just such impossible things. He believes these lies of the agent and buys. He plants believing in the future. He fails and then concludes he can't grow fruit and he won't try any more. Blaming himself for his failure, never dreaming that the agent lied and sold him kinds of fruit that the best horticulturalist in the state could not grow. The trouble was in the beginning, he did not start right, hence his failure. He did not fail because farmers cannot raise fruit, but because he was trying to do things not possible.

How should the farmer start his fruit garden? The first thing is to select a piece of well drained land near the house, clay sub-soil preferred, put it in good condition by deep plowing and thorough harrowing, if you can have the rows ten rods long they will be a convenient length and easy to cultivate. The next thing to do is to buy his plants, which he should get from some nearby reliable nursery, of which there are many in our state. For strawberries plant one row each of Crescent, Warfield, Bubach, Miner and Lovetts Early, 500 plants, 100 plants to the row, set 15 or 16 inches apart, rows to be four feet apart. Plant as you would cabbage plants, and be careful not to plant too deep, for if the crown of the plant is covered it will not grow. Cultivate shallow and often. Do not ridge the row too high. Do not let the rows become more than fifteen inches wide and not too thick in the row, for if the season is favorable the danger is of a matted row too thick. In the fall when the ground freezes cover the plants just so as to hide them from view with clean straw or slough hay, clean off weed or grass seed. In the spring uncover the top of the row and leave the mulch between the rows.

After fruiting remove the mulch and blow off the row to four to six inches wide, cultivate again all summer and let the rows again spread to fifteen inches wide, and again cover in the fall, etc. A patch is not worth leaving after the second year, so the farmer should plant a new patch every year. A patch of strawberries will not take any more work to grow them than that many cabbage plants.

Next mark off thirteen rows, six feet wide, plant four rows of raspberries. One of Kansas and one of Gregg for black, one row of Turner and one of Shaffer for red. The last is excellent for canning and jam. The good housewife will find use for them all. Plant next four rows in blackberries, two rows Early Harvest and two rows Snyder, the last will come in about the time the first are gone. Next plant two rows of currants, one Red Dutch, the other row one-half each of Cherry and White Grape, next one row of Dwarf Juneberry, these berries resemble huckleberries and make splendid pies and are excellent for canning, no farmer should be without them. These plants can be set about three feet apart in the rows, or fifty plants to the row if ten rods long. Any one who can cultivate corn can cultivate these plants. Cultivate shallow and keep them clean. The young canes of the raspberries and blackberries should have the tops pinched out when they are about knee high to check the growth and make them stronger canes. After fruiting, or during winter, remove all the dead canes by cutting them out. They should be burned to destroy the insects in them as well as to have them out of the way. The gooseberries, also, should be pinched and not be allowed to make too heavy a top. Next I would plant five rows of grapes, rows eleven feet apart and vines eight feet apart in the row, or 100 vines in all. Plant Concord, Cottage, Warden and Ives for black; Perkins and Lindley for red, and Niagara and Pocklington for white. Cultivate them by planting between the rows potatoes, cabbage or bunch beans. They should have a small stake till the second or third year, when they should have a trellis by setting posts every eight feet, along which stretch wire. The top wire as high as a man can reach. Use three or four wires. Trim the vines every year after they are three or four years old by removing all the wood of the last year's growth, except two or three eyes. Such a fruit garden taken care of will be a blessing to any family, and no product of the farm will pay better for the amount invested. In closing I will say that the best advice I could give a farmer who wants to plant a fruit garden is to become a life member of the Illinois Horticultural Society at a cost of $5, thereby getting all the back volumns and a volumn each year as soon as published. This is a library in itself and worth many times more than the cost.

DISCUSSION.

MR. RIEHL—What do you do with the Concord and Moore's Early?

MR. BEAL—Moore's Early is not productive enough.

MR. CALLAWAY—What variety of gooseberries do you recommend?

MR. BEAL—Ninty-nine per cent of my gooseberries are Houghton. No other variety has ever paid me. I have had pretty good results from Downing this year.

MR. CALLAWAY—How do you like the Loudan red raspberry?

MR BEAL—I have not grown them.

MR. RIEHL—I would like to ask Mr. Beal why he recommends the Ives for the farmer?

MR. BEAL—I never lose the Ives. I recommend it because it is practically proof against rot.

MR. RIEHL—It is a poor grape in quality.

MR. BEAL—It is better than no grape at all. I suspect half of our farmers have no grapes.

MR. JOHNSON—Did you recommend the Concord at all?

MR. BEAL—Yes, and the Ives.

MR. MORRELL—Do I understand your difficulty with the Concord is rot?

MR. BEAL—Yes. The average farmer is not going to spray and work with his fruit like a fruit grower, and I contend that it is better to have the Ives grape than no grape at all.

MR. MORRELL—Is the Ives rot proof?

MR. BEAL—Practically so.

MR. MORRELL—Do you recommend the Niagara?

MR. BEAL—Yes.

MR. RIEHL—I object to planting the Ives grape in farmers' gardens because the quality is so poor. Because the Concord rots if it is not taken care of is no argument at all why the farmer should not get the proper machinery and spray. If it is too much trouble well and good. Don't spray then. He can prevent any variety of grape from rot if he

will bag it. If he has not the time to do that his children can do it. Anybody can put a bag on a bunch of grapes, and if it is bagged we know it will not rot, if it is done in time when the grapes are very small. The paper also recommends the Perkins. I want to object to that, because it is too poor. I would put in its place the Woodruff Red. It is a better grape in every way.

MR. BEAL—A farmer will not plant a grape that wont bear. My idea is to get the farmer to plant something and by and by he will work into something better. The Perkins is not so bad a grape after all.

MR. H. AUGUSTINE—If I planted grapes I would plant the Golden Pocklington. In a great many localities further south it will not do well. Besides that a farmer is not so apt to take care of his grapes. They are a very weak grower; a very light foliage, especially where the sun is hot. But then I do not want to recommend the planting of the Ives. I do not want to plant the Ives for any purpose. I want to say most emphatically, plant Moore's Early. I do not know of a place in Illinois where it does not do well. It grows more vigorous than the Concord, has a better foliage even than the Concord, and that is saying a good deal, and it comes ten days to two weeks earlier, and I do not see how a farmer could get along without Moore's Early. When the Concord brings a cent and a half a pound, Moore's Early will bring five cents a pound. These other varieties are all right but they don't do only in certain localities. The recommendations of varieties in that paper will not do for all over the state.

MR. HARTWELL—As a reliable grape for the farmer the Concord stands at the head. I prefer the Worden. The Moore's Early is not a good bearer with us. It is of good quality, and as Mr. Augustine said, it ought to precede the Concord and cover a part of the season. The Brighton for a red grape; the Niagara for a white grape. These are the grapes we have in Northern Illinois.

MR. MILLER—Have you any knowledge of the Early Ohio?

Mr. Riehl—It is a fraud of the worst kind I want to say I think Mr. Beal is correct and that Mr. Augustine is wrong when he wants the Moore's Early put in there. The Moore's Early is a grape that does not bear very well unless it is properly handled and the average farmer wont know how to handle it. Mr. Beal has recommended the Cottage, which is as early as the Moore's Early and a better bearer, and will in the average man's hands do better than Moore's Early. Covering the same season, I would prefer it to the Moore's Early. The reason Moore's Early don't bear well is that it is generally grown on too heavy wood; and in order to get a crop of that grape you want to grow it on very light wood, either on very small canes or lotterals of the cane. If you prune in that way you will get a fair crop.

Mr. Johnson—I would not have you lose sight of the value of that paper in this discussion in reference to the varieties recommended. This matter has been a bone of contention for a long time. We may differ somewhat, but upon the general character of that paper we can all agree as to its recommendations. His recommendations to the farmers as to what they ought to do are excellent.

Mr. Miller—One thing ought to go forth from this convention and that is, buy your fruit trees from some reliable man who has tested them and then plant them. Do not buy from these fruit tree peddlers who go from door to door and recommend something that never existed. The lightning rod man is a big humbug, but the fruit tree man is ordinarily a bigger one.

POTATO CULTURE.

Dwight Herrick, Rochelle.

The leading essentials to the growing of a profitable crop of potatoes in Illinois are—proper selection of varieties, thorough culture and vigorous seed.

Of the long list of varieties originators have given us, only a few can be depended upon to produce a crop every year on average soil, and with ordinary culture in our climate. Among them are the varieties belonging to the Ohio family,

such as Early Ohio, Ohio Jr., Early Six Weeks, Early Market, etc., for early. Rural New Yorker No. 2, Craman No. 3, Banner and Simmin Beauty for late.

The next question after selection of variety is to procure seed of vigorous quality. Such seed must be from plants that have had an uninterrupted growth from the starting of the seed to maturity, else deteriation will surely result in spite of all efforts made by selecting seed of suitable size and shape. Even after maturity seed will deteriate rapidly unless very carefully handled. All early potatoes should be dug soon after ripening, placed in small heaps upon the ground, covered with straw and a light covering of earth, except a little space along top of pile, which should be left for ventilation. Late in fall all varieties should be stored either in root cellars, in piles in the field, or any place that can be kept at a low temperature and is moist enough to prevent evaporation of the potato.

The past season a test of Ohio seed from different sources was made. Seed procured from the Red River Valley, Minnesota, yielded at the rate of 110 bushels per acre, marketable tubers. Selected seed grown in Northern Illinois yielded at the rate of 95 bushels per acre. Seed from a neighboring farmer, who had not changed seed for eight years, yielded at the rate of 35 bushels per acre. The treatment, soil, etc., the same in all cases.

I prefer to cut seed to one and two eyes, using good sized tubers. In every case the seed should be treated for scab, and before cutting. Dissolve two ounces of corrosive sublimate in three gallons of boiling water, adding enough cold water to make fifteen gallons in all. Nothing but wood should be used in handling the mixture. My method is to place the potatoes in a shallow tank or vat, and shovel them out with a wire shavel. They should soak not longer than one and one-half hours. Dry before cutting.

Soil that will produce fifty bushels of corn per acre with ordinary culture, will produce one hundred to one hundred and fifty bushels of potatoes per acre. Early varieties require richer soil to produce equal to late sorts, because of their short season of growth, they also require closer planting. In field culture nothing equals a clover sod, it should be plowed in the autumn with a sod plow so that the furrows will be turned evenly, and about four inches deep. In the spring the ground should be thoroughly pulverized with some such tool as the Acme or Disc pulverizer, and then replowed some three inches deeper and again thoroughly pul-

verized. (By thoroughly I mean going over the land not less than four times.) Care should be taken to work the soil only when dry and mellow, nothing is more harmful than working soil too wet.

Closeness of planting depends upon variety and fertility of the soil. Early varieties may usually be planted nearer, say two and a half to three feet, seed pieces ten to fifteen inches apart in the row. The richer the soil the closer they may be planted. Late varieties, rows three to three and a half feet, pieces twelve to eighteen inches apart in the row. When the soil is very rich, varieties such as Carman No. 3, Rural New York No. 2, that are apt to grow too large, should be planted quite closely, which will have a tendency to reduce the size of tubers.

The depth of planting must depend upon circumstances largely. The planter must use his own judgment. From three to four inches will be about right, in loose friable soil deeper, in hard clay soil not so deep.

When planting leave a slight ridge over the row, this will help to keep soil from packing by rain, and will be a great help in destroying weeds later.

The ground should be thoroughly stirred to a slight depth after every rain, from soon after planting until large enough to cultivate. A fine-toothed harrow or Breed's weeder will do a good job, unless the ground is clody and packed by rain, then a weeder is of no use whatever. The very first cultivation may be comparatively deep; say three or four inches, but subsequent cultivation must be shallow, not over one and one-half inches, for when the tops have reached the heighth of six or eight inches the roots have met between rows, and at this time of their growth the most vigorous roots are close to the surface. Cultivation should be kept up until this crop is practically matured, or until the vines shade the ground, and are so large as to be greatly damaged by the process.

If the old bugs are very troublesome spray with a mixture of paris green, three-fourths pound; lime, two pounds; water, fifty gallons. The lime should be slacked very slowly and then strained through a fine wire screen. A very good sprayer can be made by placing an ordinary barrel with a spray pump upon a cart made from a pair of corn planter wheels, these being wide will not pack the soil so much. When the young bugs appear spray the field thoroughly with the same mixture. If bugs are extremely numerous, use three-fourths to one pound paris green, but do not forget the lime, or ruin will likely result.

I have not been able to check the blight by the use of sulphate of copper, whether it is from want of a nozzle that will thoroughly cover every bit of leaf or not I am unable to state. However, by thorough culture, good seed (of suitable variety), and fertile soil, a crop can be grown in spite of blight. A strong, vigorous plant will withstand the attack of any device to a greater degree than one of feeble growth.

We farmers of Illinois will be able to grow potatoes profitably just as long as they can be grown profitably in Wisconsin or Michigan. While our yield will not average so high, the difference of net prices will make up for any loss in yield. We must remember that our home market is our best market, and that Chicago is the poorest potato market in the United States, if not in the world.

DISCUSSION.

SECRETARY DUNLAP—Does the spraying with paris green injure the vine?

MR. HERRICK—No, sir, not when mixed with lime.

SECRETARY DUNLAP—What were the proportions of your solution for treating seed potatoes?

MR. HERRICK—Two ounces corrosive sublimate dissolved in two or three gallons of hot water. Then dilute in enough water to make it fifteen gallons in all.

MR. BARNARD—What is the object of adding lime to your mixture of paris green solution? What is the benefit to be expected from the use of lime in the spray on potato bugs?

MR. HERRICK—The lime neutralizes the acid in the paris green. It is the acid that injures the foliage. It is the same ingredient that is used in the bordeaux mixture. I put in two pounds. I know that is enough.

MR. BARNARD—I use about a half a pound of paris green to fifty gallons of water. I never put lime in.

SOME EXPERIENCES IN THE CULTIVATION AND CARE OF A BEARING ORCHARD.

H. A. ALDRICH, Neoga.

Mr. President:

The older part of this apple orchard was planted about twenty-seven years ago. There was also planted at the same time a pear, peach and cherry orchard; the pear, peach and

cherry orchards have long since passed out of existence and been replaced by apple trees. In replacing the cherry orchard, a few old snags were left where they did not interfere with the replanting of the apple trees, expecting that they would only live a year, or two years at farthest; but strange to say they are still alive, and what was more surprising have not failed of a good crop of cherries since the owner commenced cultivating them, and forces the conviction that had they been cultivated from the start that the old cherry orchard would have been living and thriving to-day. After the old original orchard commenced bearing it was discovered that there were several varieties that would not pay for the use of the ground they occupied, and it was determined to grub them out. But removing them in that way proved a slow and costly undertaking; and not only that, but the young tree replanted in the same place did not start off and grow as it ought to. It was found that by taking a common one and one-half or two-inch augur and welding on a piece of iron so as to make the whole thing about four feet long, then by boring under the old inserting a half pound stick of dynamite, with about eighteen inches to two feet of fuse, that the whole thing could be lifted or loosened, so that a very little extra work would remove the stump, and not only that but it made a hole that it took a half load of fresh dirt to fill up, and the young tree replanted in that place would commence and grow from the start. Proving that there need be no fear of replanting an old orchard with young trees, if they used dynamite to remove the old stumps; providing that they fed and cultivated the young trees as they ought to be. In removing the unprofitable trees in one part of the old orchard it left three rows of old winesaps in the center of a block of young trees, so that it was almost impossible to cultivate the young trees without including the old ones. It almost seemed a waste of time to leave these old trees, for they had borne no apples for six or eight years, and what little foliage they put out every spring was small and covered with a sooty looking substance, and most of the trees had one or more limbs dead clear back to the main trunk, and a few were more than half gone in that way. The first year's cultivation made no difference that season, but the following spring they put out a set of fair sized healthy leaves, the following season good foliage and a crop of apples too small for market, and the last two years the crop had to be thinned in order to keep the trees from overbearing.

Before this time the balance of the old orchard had passed its prime; had almost ceased to bear any apples fit for market and the trees would shed their leaves long before the proper time, going through half the season with bare limbs under a scorching sun, but the green hillsides of Kentucky could not show a finer set of blue grass than grew under those same old trees. They had not been plowed for ten or twelve years, and the roots were only just under the surface, making it almost impossible to plow, and it was some time before a suitable implement could be found to tear up the sod without injuring too many roots. It is generally supposed that the roots of a tree extend outwardly about as far as the top, but the hired man in this orchard proved that was a wrong theory. Some of the long slender roots were traced twenty to twenty-five feet from the main body, and the end was not reached even at that distance. These trees, like the winesaps, did not show any of the effects of cultivation the first season, but the second season they came out with a healthy set of foliage that stayed on all the season and a good crop of apples.

This orchard has been sprayed for a number of years, but with such varying success that the owner was almost discouraged and thought he would have to give it up. Commencing with water and paris green simply as an insecticide, had gradually drifted into the more complicated bordeaux and paris green mixture used, both at one time, as an insecticide and fungercide; for it seemed a waste of time to go through all the motions for only half the work. If you are spraying for the apple worm why not add the bordeaux mixture and spray for the scab at the same time? The spraying of this orchard has had to the owner all the fascination of the game to the young gambler. The successes to the close observer have been just enough to show that if we only knew how, and when and where to use the spray, that we would be masters of the situation; the outsiders have seen nothing but the failures. But spraying will never be fashionable until we have a more simple and easier prepared mixture than bordeaux. Its preparation is too complicated and it is too hard on the pump. So far have only found one pump that was able to stand it for more than one season.

For some years the early harvest apples in this orchard had been so scabby that they did not pay expenses of shipping; but the first season that they were sprayed with bordeaux mixture they were as smooth as though they had been polished. For shipment they were sorted into two grades, size being the only difference, leaving five barrels of

very small but perfect apples; more for curiosity than any thought of gain, the five barrels were shipped along with the rest, but branded No. 3, the commission man remarking when he made his returns that, "by keeping back the small apples until he closed out the others, they sold for almost as much as the larger size—they were so perfect."

Previous to the year 1896 the spraying of this orchard was not very systematic as to time and number of sprayings; some years it was sprayed just as the blossoms fell, sometimes not until the apples had formed, and then other times not until the fruit has reached considerable size. But the season of 1896 it was determined to give it a thorough spraying just as the "books" called for. A tank holding 300 gallons was made, at considerable expense, and the orchard was given its first spraying before the blossoms opened, another just as they fell, another a week or ten days later, and another one still later, with the result that during the season it showed up with a crop of the wormiest lot of apples in that section of country. The trees were full of apples and still there were not enough to furnish each worm with a home of its own. It is claimed that the moth lays its egg in the maturing blossom of the apple just as the petals fall, and as soon as the caterpillar hatches it burrows into the apple. But this orchard that season must have developed a different breed of worms, for they not only burrowed through the blossom end, but the sides as well, literally turning those apples into city flats. At gathering time these apples contained no worms. But they could not be classed as No. 1, although perfect in form, size and color, for they were bored through and through; they showed no signs of rot—just simply the holes. In examining the fruit, along through the growing season, by cutting it open, it was observed that the holes were full of water and the worms dead. A neighboring grower who observed the same thing remarked that they were all drowned. Was it the result of the downpour of rain we had just about that time, or an extra flow of juice?

The trees commenced blooming that year April 21st and had dropped their blossoms by the 25th—clear, bright sunshiny days with no wind. The spring of 1897 everything commenced blooming April 25th, but was not in full bloom until April 29th; then we had four cold, cloudy, rainy days, ending with a heavy white frost; last blooms gone by May 9th; last four days bright, clear sun and no wind.

Commenced spraying May 10th, and as last year had

been so disastrous the spray was made stronger by adding more bordeaux mixture and three-eighths of a pound of paris green to fifty gallons instead of one-fourth of a pound as formerly, and each tree was sprayed until it would drip. Owing to the extra time it took to do such thorough work, and also bothered by frequent rains, did not get through first spraying until after May 25th. Shortly after that time the orchard showed up with the snarliest, lop-sided lot of apples it had ever borne. It would have been hard to find a more disgusted fruit grower than the owner, almost ready to turn the whole thing out to the commons. But the cut-away, the acme and the smoothing harrow were kept going in that part of the orchard that had been cultivated the year before, working it up so that all through the drought of this year it had from two to three inches of dust on top with plenty of moisture underneath. Right in the hotest and dryest part of the season it was noticed that the apples on the cultivated part were improving, and they kept on swelling and getting smoother and smoother until gathering time, which resulted in an extra good crop of apples free from worms. In that part of the orchard that had not been cultivated the apples showed no improvement and were hardly worth gathering, even in the exceptional year of good prices. The trees and soil were identically the same, nothing but a portable fence separating them, only one part was cultivated and the other was not.

It has generally been considered a fortunate orchard that has a timber wind break on the west and northwest; this orchard is so situated. But there has occurred the loss of two crops of apples in this orchard by late spring frosts, just on account of this same wind break allowing the cold, still air to settle in behind the timber. But there were many times when it was a real benefit, by allowing spraying to be carried on and by reducing the number of windfalls during windy weather or during a heavy storm, and also preventing the breaking of trees when loaded with fruit or ice.

In the observation and care of this orchard, the owner has learned that in cultivating an orchard it is not necessary to plow as though you were going to plant corn or potatoes, the object is simply to keep the soil mellow on top.

That the cultivating must be done early, as trees complete their growth mostly by the first half of July. Never start in to cultivate an orchard after mid-summer.

That the fruit in that part of the orchard that is cultivated does not ripen so early and is not as highly colored as in the uncultivated part.

That to make a success of spraying you must make good use of that "think tank" that rests upon your shoulders, and that you must either pump or hold the nozzle.

That a certain set of iron-clad rules will not do for every orchard or every season. That while we cannot alter seasons we can alter or modify conditions.

That a close observer in a certain orchard will develop methods and results unconsciously, but that he can rarely impart this particular information to his neighbors, and even if he could it might not fit his situation.

That there are certain problems that each fruit grower must pick and solve for himself, and if he cannot do it he must give place to the one on the ladder who can

DISCUSSION.

SEC'Y. DUNLAP—I think Mr. Chairman we can hardly overestimate the value of a paper like that just read by Mr. Aldrich. It presents to us facts that come from actual experience, and they are valuable because they are facts. I have been through the orchards of Mr. Aldrich and noticed the work that he has been doing there for the last two years, and I thought the proper place for such a paper as that was in the report of the State Horticultural Society, and hence I went after him this fall, and although he very modestly declined at first, I finally prevailed on him to come up here and give us that paper. Everything he has said in that paper I have found exactly as stated. He has made a wonderful success of cultivation, and has been enabled to harvest a good crop of apples and to get the highest price that was paid for apples in this vicinity last fall.

MR. MORRELL—I experienced a peculiar satisfaction in listening to Mr. Aldrich's paper. About two years ago I expressed before this Society the opinion, that he has verified, viz: that many of the orchards of Illinois, judging, as I see them from trains in passing by, were suffering from being hide bound, that they lacked cultivation, one of the essentials to good orchard growing in our own state. It has been

stated and written that orchards after reaching certain stages are better seeded down in certain localities in this state. It is contrary to nature. We have none too much fertility in the soil. The moisture is better retained in the soil by surface cultivation than by any other way. I believe thorough cultivation of an orchard is good in any part of the United States. I believe plowing two or three inches deep in an orchard is a good thing.

MR. CALLAWAY—I would like to inquire if the growing of raspberries and blackberries in a young orchard for three or four years, provided the cultivation is thorough, and some fertilizer is added, is injurious to the young orchard afterwards?

MR. JOHNSON—Better have them in other places.

MR. HARTWELL—I have a question to ask in regard to the flow of gum sap from cherry trees in immense quantities. I have had a gallon flow from a tree the size of my arm and deposited at the roots, what is the cause, and is there a remedy?

PRESIDENT GOODRICH—Can any one answer this question of Mr. Hartwell's?

SEC'Y. DUNLAP—Questions that do not pertain especially to the paper under discussion ought to be handed to Mr. Barnard, who is in charge of the question box.

Mr. Stanton presented the following resolution which was adoped:

WHEREAS, The Society has been called upon to take suitable action on the participation in the trans-Mississippi Exposition to be held in Omaha, Neb., in 1898, and that we have no fund available for that purpose, and

WHEREAS, The legislature appropriated $45,000.00 for the purpose of making an adequate exhibit of the resourses of this state at said exposition therefore, be it

Resolved, That a committee be appointed to confer with the commission in charge of this fund with the object of securing the financial aid of said commission to enable this society to have a suitable fruit display at the Omaha Exposition.

THE CHAIRMAN—This closes the program for this morning session, but Mr. Archie M. Augustine is expecting to be called away and he has a paper which we would be glad to hear now.

THE RELATION OF THE NURSERYMAN TO THE HORTICULTURIST.

A. M. AUGUSTINE, Normal.

Mr. President:

I know it is not very good form to commence a paper with an anecdote, but I cannot refrain from it in this case. In speaking with a friend about this subject, he said: "Because of the evasive way in which it had always been treated when brought up for discussion, it reminded him of a gentlemen that had employed an Irish servant; during his first day of service his master instructed him if anybody should call during the morning he would be occupied and not at home. The servant asked what he should say, and was told, 'O, just give them an evasive answer.' Later, upon being asked whether any one called the Irishman replied: 'Yis sor, a foine looking gintleman indeed called to see you sor.' 'And what did you say to him?' 'O, sor, oi jist give im an evasive answer, sor.' 'Yes, but what did you say to him?' 'I ses, ses I, sor was yer grandmother a monkey, sor?' "

This certainly is a question which has not had sufficient attention and is probably due to its being a delicate subject to handle. I realize I am treading upon rather dangerous ground in discussing it, nevertheless, I may say some very plain things before I get through. The rapid advancement in all lines of industry in America the last thirty or forty years has not found horticulture lagging, especially in our own state. This is equally true of the nursery industry. We owe a great deal to the nurserymen for the wonderful developement of their various methods of propogation and cultivation. This has made it possible for us to secure stock for our orchards and fruit farms cheaper and better in America than any where else in the world. And yet, had it not been for a progressive and appreciative horticulture this could never have been so.

There are so many phases in this subject that I can only touch lightly on many of them.

Take the different methods of propogation, where the seeds that form the foundation of our orchards come from,

and why certain kinds of seed make a stock that produces a better tree, where most of the seedlings for propogation come from and the reason. How and why the French people excel all other nations in this work; how it is really an outgrowth of the French revolution and its development a feature in French history, perhaps follow the seedlings across the water in mid-winter to their new home in America, how and why the various kinds of trees are propogated with them in this or that way until through a long series of manipulations they are at last turned over to the horticulturist as properly grown trees or plants for his orchard or fruit farm.

The new master again subjects the plant to many methods of planting, trimming and cultivation until finally if it has come through all in safety, the tree brings forth fruit after its kind and serves to add to the health and wealth of our great nation.

Then, again, how nurseryman and horticulturist by combining their knowledge and labor succeed in introducing new and improved varieties of fruit, often indeed from foreign countries and adapting themselves to their new home and mingling their blood with that of our native varieties, give new strength and qualities to our own sorts so that they affect very materially our horticultural industries.

This is perhaps more prominently shown in our plumb, the comparatively recent introduction of the Japanese sorts, and can be traced in a more or less degree in our apples, pears, peaches, cherries, grapes, strawberries, nuts, and in fact, nearly all the fruits we have.

Think, for a moment how, when the horticulturist has developed a new variety of fruit, the nurserymen with their advanced methods of propogation will in a few years time have it on the market in all parts of the country and it is known and planted everywhere.

I knew a large southern nurseryman to purchase one hundred small yearling pear trees of a new variety, not long ago, and in six months time he had 3,000 trees for sale propogated from them.

In 1895 Luther P. Burbank introduced the Wickson plum, he valued the original tree at $2.400. To-day you can purchase them of many of the largest growers for only two or three cents more than ordinary varieties cost, and by the car-load. Thus making it possible for the horticulturists throughout the country to profit by these new and valuable introductions.

This means more than that, it means we must keep up with the times if we wish to keep in the ranks of horticulture.

Again, some of our best varieties of fruit have existed for many years in an out-of-the-way place and being known only locally, in all probability these varieties would be utterly lost to us were it not for some nurseryman chancing upon them and introducing them generally.

Viewing the relations of the nurserymen and horticulturists from these various standpoints is pleasant and somewhat profitable, it might be called a part of the poetry of our occupation.

Thus far we have not mentioned the pecuniary relations of the nurserymen to us, and this is undoubtedly the most vital. The work of the nurseryman is so closely allied in many respects to that of the horticulturist that it is difficult to tell where the one leaves off and the other begins, and the more we can work in harmony the greater will be the advantage to both.

The nurseryman is in the business for the money he can make out of it (with a few exceptions, I know of where they are in it because they cannot get out of it). Most of the horticulturists are engaged in their work as a business for much the same reason; but the love of the work, its healthfulness and pleasure undoubtedly entices many. Indeed, I sometimes think more people are horticulturists for the pleasure they derive from the work than we have any idea of. These two classes occupy each a unique place in the position the industry holds to-day.

We grow our fruit to sell. It has to please the eye or there is no sale. The nurseryman grows his trees to sell and I am sorry to say the eye here, as well, plays entirely too prominent a part.

Nine times out of ten the sale of a Willow Twig or Minkler apple means a complaint and claims for reduction, while the growth of a Wallbridge or Whitney would have had praise. Often the amount of cord wood in a tree does more toward making a sale than the variety. Add to this the work of the unscrupulous tree men and you have a foundation for much of the contention between the people of these two industries, but bear in mind I said UNSCRUPULOUS TREE MEN, for I propose to deal somewhat with this individual further on.

Our relationship needs reform, and needs it badly. There is no question about that. But before touching upon this let me say, we may talk and preach as much as we choose

but until we make imperative demands, demands that touch the nurseryman's pocket to his advantage if he accedes, and the opposite if he does not, then, and not till then, can we hope for reforms. These demands must not come from individuals here and there, but must be the united voice of the horticulturist.

Time has made rapid changes in our work of late years; education and competition have made new demands upon the nurseryman and horticulturist as well. There is a period when the horticulture of all new countries is crude, when fruit needs no name, all varieties of apples are simply apples, peaches, pears, strawberries, blackberries, etc., go by their family name. Later they are distinguished by color and season, then by taste, and last of all by individual names. And this brings us to the feature of our relationship with nurserymen that is anything but pleasant.

I will venture there is not a man in this audience who at some time or other has not been unmercifully fleeced in buying trees or plants.

After paying a big price, possibly two or ten times what the trees were worth, planting them carefully and tending them five or six years, they prove to be a summer apple, while you bought them for a winter apple, or the raspberries were black instead of Schaffers; grapes all Concord instead of Pocklington or Empire State. You find after a number of years of careful attention, much expense and long waiting, that if in the first place you had been robbed of the amount the stock originally cost you would have been better off than to have bought the trees and planted them.

Some few of us, perhaps, who are able to make nice distinctions in bark and leaf, and know the trees from these marks, think we are safe from such danger. Others of us think we know where to buy to avoid fraud. That may all be so, but when one man has had sufficient experience to lead him to this knowledge ninety-nine have not. The object of our horticultural societies, if the annual addresses of our Presidents since its organization are to be taken at their word, is to help horticulture and assist its advancement in every way we possibly can. Our society is not for the benefit of the few horticulturists among us who are sufficiently posted on all these things not to make mistakes, but rather these are the people we look to for the most assistance to general horticulture. This knowledge is what the fruit growers at large want.

But don't let us be too sure we are proof of these things. You will pardon me if I use a few personal illustrations.

I have in my possession an exact copy of an order that was sold in this State last season to a gentleman of some means, who wished to establish a fruit farm and home in the country. The order would have been filled at any reliable nursery in the State for $50 or $60. The gentlemen who sold this order have a very nicely fitted up office in one of our cities and their trees evidently bear fine fruit, judging from the large diamonds they wear in their shirts. This order was sold for $451.31.

Out of fifty or sixty varieties of apple, pear, peach, cherry and plum selected, this man would be morally certain not to receive to exceed two or three varieties of each and probably only one. This firm is doing a flourishing business furnishing the novices in horticulture in our state the varieties of fruit recommended by the Illinois State Horticultural Reports.

Not many miles from my own home lives a gentleman who a few years ago purchased a pear orchard, he paid a dollar and a half each for the trees for he wanted the Lincoln pear and the Lincoln pear was rather high at that time. The trees were duly received, planted and grew. Last year chancing to meet one of our prominent horticulturists he asked him to visit his orchard for he was proud of his Lincoln pears, and much concerned as to the best methods of treatment, pruning, etc.

He learned with much sorrow that he had a very promising Keiffer pear orchard.

Should ony of you be curious enough to investigate I can point you to one of the best fruit sections in our state not far from here where for miles around the people bought great quantities of the Lincoln pear and secured without exception Keiffer pears.

In this I have avoided names carefully for one and all of us under such conditions prefer to suffer our loss in silence and without sympathy, afraid of ridicule perhaps. Indeed our silence in this direction has been so marked that the field is entirely open and without obstruction for such operations.

You have undoubtedly all heard of the Irene peach, that ingenious production of some fertile brain. I have often speculated as to the amount of good that man could have done who first evolved this Irene peach story, had his efforts been turned towards an honest occupation. You know the story too well for me to take up you time repeating it in detail. How in Northern Dakota a government surveyor

passing through the country ate a delicious peach and thoughtlessly cast the stone away. It fell by the roadside. Nature who is always doing so much for us took the matter in hand and the wind brought a maple seed and deposited it by the side of the peach seed. Springtime came and these two seeds pushed their tender roots into the soil and their heads toward the sun immediately touching each other. They grew side by side till the life of each became a part of the other, and in this way with many further embellishments as the needs might be, nature did a wonderful work and gave to the world a peach tree with remarkable qualities of fruit and above all the hardiness of the maple tree.

An ex-president of the American Forest Tree Association and a gentleman of knowledge and experience in horticulture told me some time ago that even he helped swell the number of defrauded men who purchased the Irene peach. Many thousands of dollars were literally stolen from the people of our state who purchased and planted these trees in good faith. Yes! I know of instances where individuals purchased as much as 500 trees each of the Irene peach and paid a thousand dollars in cash for them, and to my certain knowledge one establishment that sold many thousands of them purchased any kind of peach trees here and there wherever they could and paid not to exceed four cents per tree for them. The people I have mentioned as doing this kind of business are only a few of a host of others I can name from personal knowledge. There is no possibility of its being a mistake for the same things follow in their wake wherever they go.

It is a premediated confidence game that is going on among us everywhere, and when I say that we in a measure are responsible for it, we, the horticulturists of Illinois and members of the various societies, I mean every word of it. We are looked up to as authority on subjects of horticulture. Our annual reports recommended new fruits, and this thing and that thing, but this subject is only conspicuous by its absence, thereby furnishing this class with one of their strongest weapons. What we have intended as a means of protection ends by being the mainspring to a snare.

Gentlemen, we cannot go on ignoring this state of affairs as we have done in the past and do our duty as a Society. The state is giving us $4,000.00 a year for the advancement of our work, and each year we come together and spend much time and energy in discussing the latest methods and most recent discoveries while this disease that is sapping the blood from every vein of our occupation is allowed to proceed unmolested.

Michigan and New Jersey have their Yellow's law, California has a great many laws on disease and insects of plants, and bills have recently passed the legislatures of nearly every state in the union to prevent the spread of that little insect, the San Jose Scale, and in fact nearly all the states have some kind of laws of more or less severity along these lines, and we jump on these little defenseless insects with all the strength we have, write volumes on the best way to wipe them off the face of the earth, which is all proper and right, and yet when a disease appears that in its direct injury to horticulture rivals all other diseases combined, when such a disease appears among us in the shape of men of our own size we stand dumb as sheep, while we all, including the lambs, are sheared.

I imagine a number of you are waiting for me to come to a stopping place to ask, "Well, what are you going to do about it?" But I will anticipate you and ask that question myself. My paper, to keep within the subject should close here, if after reasonable discussion, ways and means cannot be found to control this evil, and we do not attempt to control it, even then the time is not yet come to waste energy along these lines.

But gentlemen, I believe the time has come and I am certain by a united effort on the part of this Society we can in a great measure control this fraudulent work, if not wipe it out entirely. The nurserymen can, and I am sure will help us if we show any desire for their assistance and demonstrate by an energetic crusade that we mean business.

They have protective associations among themselves that are of great assistance. Even nurserymen who swindle the public are so classed whether they act honorable with other nurserymen or not. Indeed I sometimes think nurserymen are doing more for us in this matter than we are doing for ourselves. At the national meeting of the nurserymen society a portion of time is set aside entirely for these protective associations.

Why can we not have a standing committee whose business it will be to work for legislation along these lines and by united effort locate this work that is being done and put a stop to it.

DISCUSSION.

MR. HARTWELL—This reference to the Irene peach is timely. Those trees have been sold during the last few years for a dollar a piece, and I do not believe there are fifty trees left out of thousands that have been sold in our country.

MR. PERIAM—I have listened to the reading of that paper with a good deal of interest. It is right in line with our duty. Any man of common ordinary business sense would not allow himself to be fooled by any such stories as that relating to the Irene peach. The idea of combining a peach and a maple tree. These trees are sold to business men, among the kings of finance. It is not the average man of the farm who buys those things, but it is the man who wants to make a splurge, and get back as near to God's country as he can in his old age. He begins to cultivate something that grows out of the ground, as it used to do when he was a boy. I consider this society not only has the right, but it is its duty, to secure such legislation, if possible, as will punish these imposters. It is our duty to combat these things wherever we see them going on.

SECRETARY DUNLAP—It might be well to appoint a conservator in each county for such people as swallow these stories.

THE CHAIR—I would think anywhere within a hundred miles of Chicago under the influence of the Prairie Farmer it would be hard to get men to bite at such bait.

MR. PERIAM—It is in those places where they are wearing big diamonds.

MR. MORRELL—In our state the Horticultural Society maintains a Legislative committee. I have no doubt the Legislature might pass laws against this way of swindling the people. There used to be a saying that there is a "sucker" born every minute. I heard the other day one was born every second. A man who will buy a tree that is said to be an assimilation of a maple by a peach tree, must have more money than brains, and I don't know but he ought to spend some of it for the good of the community.

MR. A. M. AUGUSTINE—But that money does not reach the community.

MR. MORRELL—It all goes into the trade. Those fellows are generally pretty high rollers. Some men want the Irene Peach, and some men wear diamonds on account of it.

Mr. A. M. Augustine—It is no more than right that this Society should advise the people where they can receive fair treatment and buy valuable goods. But this is such a delicate question it is almost impertinent to speak of it. We can't force the people to buy, but we can advise them.

Mr. Winn—I would like to know who can tell us where to buy? My experience has left me in doubt on that question.

Mr. Morrell—I have no doubt a Nurserymen's Protective Association would be a good thing. Then if we find anyone doing a swindling business in trees we could expose him.

Secretary Dunlap—There are two sides to this question. The fault is not altogether with the nurserymen. It is partially with the farmer. I would like to know if a man who would be swindled by the Irene peach would ever refer to the reports of this society. That kind of a man does not know there is such a society. You notify him to attend our meetings. If he does not attend our meetings, read the reports and various publications and inform himself it is his own fault, and I don't believe this State ought to act as a conservative for such a man. What we want to do is to post ourselves as to what a tree is. Anybody who knows a willow twig apple tree recognizes it at once on seeing it; the same is true as to other trees. Of course we can not all know these things thoroughly, but we can know this, that we should buy our trees of the nurserymen and not buy of the peddler, to whom a man can send an order by mail to nurserymen in this state and in ninety-nine cases out of a hundred he will get exactly what he orders, and if he got anything else the hundredth time, it would be the result of an error. My experience with nurserymen is, with very few exceptions, the trees have been true to name; but I don't buy of tree agents or tree pedlers.

Mr. A. M. Augustine—Some of the most unscrupulous tree men in our State read all the reports and all the publications printed on the subject and are well posted, and use them in making sales.

AFTERNOON SESSION, WEDNESDAY, 1:30 P. M.

The convention met persuant to adjournment. President Goodrich in the chair:

THE PRESIDENT—In the absence of those gentlemen who are on the program and who are not yet present, we will call upon Mr. Barnard to read some questions from the question box.

MR. BARNARD read the following question: "If a vigorous six-year-old apple tree be sawed off a few inches above the ground will it throw up a new sprout that can be budded, and make a successful tree of it?"

THE PRESIDENT—Mr. Buckman please answer.

MR. BUCKMAN—I am not a nurseryman, and I cannot answer the question. I have never had any experience. I know a pear tree can be.

THE PRESIDENT—Mr. Miller can you answer it?

MR. MILLER—My experience is so limited I would not untake to say.

THE PRESIDENT—Mr. Black will you answer it?

MR. BLACK—I have not had a great deal of experience. They will usually grow to a tree. But they will not generally make a tree that will bear anything in comparison with a tree grown regularly.

THE PRESIDENT—I think it is a very unusual occurrence to saw off an apple tree so close to the ground as that. An old nurseryman who wants to renew his peach trees will saw them off to make branches, and then bud them, and he will always get a good tree. We will take the next question.

MR. BARNARD—"What is the best remedy for borers in peach trees?"

THE PRESIDENT—Who can answer the question?

MR. MILLER—Plenty of good hot water will kill them and not hurt the tree. It will not scald the bark enough to injure the sap. I had a tree that was nearly dead with borers, one I had imported from New Jersey, and I wanted to save

it. I took a tea kettle of hot water and scooped a place right around it, and poured the water into it, and that tree to-day is healthy

THE PRESIDENT—Mr. Helms can you answer that?

MR. HELMS—I generally dig them out, that is the only way I know.

MR. BUCKMAN—My best remedy with apple trees is to protect the tree with wire screen, putting the bottom an inch or two in the ground. If I were going to set out another orchard that is the way I would protect all my trees, against borers, mice and rabbits.

MR. MILLER—How fine ought the mesh to be?

MR. BUCKMAN—It should be fine enough so that this little beatle that works on the apple tree could not get to it. It is the ordinary screen wire, not less than two feet high.

THE PRESIDENT—The question is not so much as to what is a preventative, as it is, what is the cure. Mr. Pearson how do you manage it?

MR. PEARSON—A peach tree is short lived any way. The majority of the peech trees set out on the prairie show the effect of the borer when they are set out. I am pretty careful to see when I set my peach trees out, whether I had them myself or buy them, that there is no borer there. After that I let the tree take its chances. If you are careful when you set them out you will be apt to get fruit. But the tree is short lived any way. A few years ago I practiced the old reliable way of digging around them and searching for the insect. That will do, but it don't pay. You have to do it yourself unless you have very reliable help. I have not had enough trouble with borers to make it in any way discouraging. I don't believe in keeping peach trees until they are very old. I don't transplant any.

MR. CALLAWAY—If the borer is not already in the tree I think you can prevent them getting in by using a strong solution of soft soap in June and July.

THE PRESIDENT—Do you put it on every year?

MR. CALLAWAY—During the first three or four years.

MR. MILLER—Will it not hurt the tree any?

MR. CALLAWAY—No, it is a benefit; the oftener you put it on the better.

MR. MILLER—I will say in regard to the use of hot water, I would take a quart, perhaps, to a tree, and let that suffice. I would not keep pouring it on, you might kill the tree by getting it too hot.

MR. BLACK—A friend told me he had experimented with bi-sulphide of carbon with satisfactory results. It kills ants and other things very nicely. I have tried it on ants and it settles them very quickly—a very small quantity. It is explosive and you don't want to have it around the fire.

THE PRESIDENT—We will now take up another question.

MR BARNARD—I will read three questions. "First—I want to put out an apple orchard of fifteen acres. What distance should the trees be planted apart. It is prairie soil in Macon county"? "Second—Will it pay to apply barn yard manure to an orchard"? "Third—What is the best way to protect trees from rabbits"?

THE PRESIDENT—We will take up the first question.

MR. PEARSON—The kind of apple would make some difference.

MR. STANTON—I think in Macon county it is not advisable to set them closer than thirty-three feet.

MR. ALLEN—The question is mine. I did not aim to mention any varieties. I want a general orchard.

THE PRESIDENT—About thirty feet is the usual rule.

Now as to the next division of the question. "Will it pay to put barn yard manure to the apple tree"?

MR. HARTWELL—Yes, if you don't use too much. The amount you should use depends on a number of conditions.

MR. STANTON—I want to caution the gentleman. I think on this soil he will not need any fertilizer. I don't believe it is needed at all in Macon county. I think if he would fertilize that soil he would produce a tree that would be porous and soft in its nature, and more susceptible to disease than if he left the tree without it. I think trees will grow fast enough in that soil.

MR. VORIS—What kind of soil is it?

MR. ALLEN—It is a black soil, about three feet deep.

MR. VORIS—I would think you would not need any fertilizer for a while. Certain kinds of trees should be planted forty feet apart. It depends on the varieties. I made a mistake by planting too close.

THE PRESIDENT—The next part of the question is: "How to protect the trees from rabbits"?

MR. VORIS—We use wrapping paper in the fall, and unwrap the tree in the spring. I have used wild grass with very fair success, but I would not recommend it.

MR. HOBBS, Indiana—I am inclined to think wood veneering is the best thing. It is cheap, easy to put on, and is durable, and has the double advantage of protecting against mice, rats and sun scald. We lose more trees in Indiana from sun scald than from any other cause.

THE PRESIDENT—How long do you leave it on?

MR. HOBBS—As long as it will stay. I see no bad effects from it. I see Mr. Goodman, of Missouri, recommends washing with a weak solution of alkali.

MR. STANTON—I want to caution the gentlemen against using a wash for protection against rabbits. I am using sheeting. I buy it by the bolt, tear it in strips and wrap the tree in the fall and take it off in the spring. The next year I use the same material again. I have tried veneering and it wasn't satisfactory to me at all.

MR. HOBBS—What is the objection?

MR. STANTON—It furnishes a harbor for insects and ground mice. I have found ground mice inside of it eating the trees up before I could find it out. It might not be so farther north. It has been said, too, that veneering dwarfs the growth of the tree. That above the veneering there is a difference in the growth of the tree.

THE PRESIDENT—Did you put any preparation on your cloth?

MR. STANTON—No, sir; I take the cloth off in the spring. I apply soft soap when I take the cloth off.

MR. H. AUGUSTINE—I have tried the method Mr. Hobbs speaks of and I want to say emphatically I believe it is the

best way. In order to keep the mice out all you have to do is to draw the veneering a little closer, so as not to have more than half an inch on either side, and the mice cannot operate in there. During the last three years we have had no trouble whatever on that score, while during the first year we lost very heavily. I believe it is the cheapest and best way to protect the trees. The material should be soaked with linseed oil, and it will last four or five years.

MR. BARNARD—I have a cheap and effective remedy that I use. I wind the stem of the tree with corn stalks; tie it on with binding twine.

MR. CALLOWAY—In cold weather I gather some tender twigs and stick around the tree and the rabbits eat them and don't bother the tree. The rabbit is an epicure and he will not gnaw the tough bark when he can get tender twigs.

MR. HOBBS—I would like to ask whether any one has noticed any serious results from the use of veneering as to the development of the body of the tree?

MR. H. AUGUSTINE—That is one of the strong points in its favor. It is heavy and the veneering shuts out all the insects. I don't think the flat or round head borer get in. I think Prof. Forbes will bear us out in the statement that they would not find their way in. Out of 24,000 trees in an orchard we have not found a single borer.

THE PRESIDENT—We will now proceed with the regular program:

CO-OPERATIVE SHIPPING OF FRUITS.

J. W. STANTON, RICHVIEW.

Mr. President:

Our society has been favored frequently with excellent papers and intelligent discussions on how to raise fruits. Largely through these influences many hundreds of acres have been planted to fruit. Year by year the work has progressed, producing fruits that contribute to the health and happiness of the grower, but having our orchards and berry fields with abundant crops, we must have a market, this is the question,

and it is one upon which we must apply the best business methods in order to dispose of the immense acreage of fruits now planted. Co-operation will do it, and this is our only hope, it ought not to be hard to do the right and practicable thing, but it requires earnest and continued efforts to accomplish this; therefore, the first step should be the organization of shipping associations at every point where car loads can be secured daily and at other points where the productions will not amount to a car load daily; two or more points should organize and arrange for loading together.

Fruit growers in organizing a shipping association must have men to manage the business who have the ability and in whom the members have confidence, upon these points will depend the success or failure of the association. The co-operative shipping association will succeed if organized and managed upon a business basis just the same as any other business enterprise requiring co-operation. Last year at our meeting here we were told by a Chicago man that co-operation was a failure, unless perhaps we join his Union, which it seems was not co-operative nor mutual in its benefits. Shipping associations are now handling the products of fruit growers at almost every point in Southern Illinois where the shipments can be handled in car lots, the small grower secures equal advantages with the large grower, and his interests are equally protected in every respect. Many of our associations in Southern Illinois have been very successful in their operations for several years; they have managers who represent the shipper in every way as an up to date business man would manage his individual affairs. I know that some of our associations have gone to pieces and several re-organizations took place, before they were placed on steady footing, the cause, I think I may safely state was simply a lack of confidence in the management and very likely without any foundation, in fact. It is strange to note the lack of confidence the average fruit shipper seems to have in his neighbor and co-worker, while this same person will load a car of fruit and consign it to a stranger hundreds of miles away and likely he has done so by the solicitation of the firm's representative who is also a stranger. I have been acting as president of our association for several years and know something of the trials and tribulations of the manager. Last season Chicago prices ran very low on strawberries, we were losing money in that market and every body discouraged. One day we concluded to put a car to Buffalo, N. Y., we loaded this car on Wednesday, the car reached Buffalo on Saturday too late

for market. It was held over until Monday, and the berries were sold five days after loading in fair condition. I mention this to show what may be done by refrigerator car service under favorable conditions, and I am confident from the experience and observation of past few years, we must find new markets and push our fruit into every small city or village in the territory of the Northwest and other parts of the country that can take it. Refrigeration makes this possible and with proper efforts we can reach every point by this means. I read a paper before the Southern Society in which I suggested the establishing of a Bureau of Information in Chicago by the co-operation of the several shipping associations in Southern Illinois, this Bureau to be used to facilitate the distribution and handling of our shipments more inteligently through a system of reports, also to secure new markets and look after the interests of the several associations in general. Last winter I noticed several Chicago firms found the market would not take all their apples readily at prices to bring them a profit, they pushed them out by corresponding with parties in the country, sending car loads to certain points and from their distributed to the smaller villages near by. Our section of Southern Illinois did not have a crop of apples last season. These Chicago men learned of this and put in several car loads there. We did not send solicitors to Chicago, but Chicago looked us up and made the market where otherwise we would have no doubt gone without apples or at least with but very few. I claim that this Bureau of Information can be made one of the most important factors in the distrubution and marketing of our products. The cost of maintaining this Bureau would be very small figured on a basis of the combined shipments of the several associations.

Recently I talked to representatives of Missouri along this line. They have found the shipping associations helpful and were of the opinion that our Southern territory of Illinois and Missouri should join in this matter and establish the Bureau. I have not attempted to give a detail as to the operation of this Bureau but simply wish to offer the suggestion beleiving that the agitation of this subject will bring out something practicable. Parties who have only the surplus of the family orchard to market will not fully appreciate the importance of this question. Many persons interested would be surprised to learn of the extent of our orchard planting in this state and Missouri. Some idea of our orchard interest can be learned by visiting Southern Illinois and just across

the river in Missouri. In Southern Illinois several counties have nearly all the available land planted to orchard, mostly apple trees, a large portion of these are now about bearing age. We find just across the river in Missouri, the Ozark Orchard company has over 60,000 apple trees and a large number of peach trees. The Olden fruit farm has 55,000 apple and 100,000 peach trees. One firm has 86,000 apple trees and will plant 200,000 more in the spring. Orchards of 5,000 to 10,000 trees are numerous. It seems from this showing we should fully realize the importance of prompt and suitable action on this subject.

DISCUSSION.

PRESIDENT GOODRICH—This topic of distribution is one of the most important topics this Society can consider. We have in our section of the country a regularly incorporated company whose business it is to do this work of handling the product. It is regularly incorporated, elects its officers, who draw a salary. It is the business of the manager to telegraph to all the markets accessible to us, and to ascertain the daily condition of the market in the various cities. We shippers have access to that information. We take that information and base our shipments on that. We have the choice of a dozen cities. We send our fruit there or withhold it. We ship in company or individually. These men are constantly getting that information. It is a Bureau of Information. I know of one or two towns where they have several of these companies organized. They do nothing else but receive and handle and ship the fruit at all times of the year and during all kinds of weather.

MR. HARTWELL—How long have these companies been in operation?

MR. GOODRICH—From one year to twenty. We have been doing this as Mr. Stanton says, and I think our failures and successes would make a large volume.

MR. PEARSON—How long have you been doing it successfully?

MR. GOODRICH—That depends on what you mean by success. If putting out from six to twelve hundred cars a year

from a town could be considered a success, and reaching markets you could not reach in any other way would be a success, and distributing over a half a dozen states, and striking an average good market a reasonable number of times during the year would be a success, then we were successful.

MR. PEARSON—For how many years?

MR. GOODRICH—I think I am serving as director in one at our place for the tenth year.

MR. PEARSON—The reason I ask is that Mr. Stanton says several have gone to pieces.

MR. GOODRICH—The one in Mr. Stanton's town has not gone to pieces, and the one in my town has not gone to pieces. I can count five towns all having institutions just like ours. Our town has two, having men who do nothing else but act as our agents, under our pay. They left the railroad service to come to us. Mr. Stanton himself was a railroad man.

MR. PEARSON—For the year round are they in your employ?

MR. GOODRICH—Yes.

MR. MORRELL—What do they do in the winter time?

MR. GOODRICH—Our work. We ship fruit, sweet potatoes, tomatoes, early vegetables or something every day in the year.

MR. PEARSON—About how many men ought to make up a working association?

MR. GOODRICH—We have in our association about four hundred shippers divided into two companies, aside from that a good many men ship by express—ship locally.

MR. PEARSON—Do they pay pro-rata for their shipment, or so much per capita.

MR. GOODRICH—I will explain that to you. We make a requisition on the railroad company for so many cars. They set them off on a switch at our station, where nothing but fruit cars go. The switch was built for that purpose. Those cars are at our service. We have an old railroad man—a good telegrapher, and he collects information, decides where

to ship, and informs us he is going to ship a car of fruit to Chicago to-morrow, one to Minneapolis the next day, and one to Milwaukee or St. Paul the next day. We take our fruit down to the car and our mark is placed on it. The man handling the fruit makes a manifest or record of it. The railroad man does not touch it at all. Our man at the other end receives that car and pays the freight to the railroad company, he then delivers the fruit over to the commission man, collects the freight of him, and enough more to pay the cost of handling, such as loading it and taking it out and all salaries and expenses. All the expenses follow the fruit and are collected at the other end. Should there be an excess it is sent to the home treasurer. But each individual shipper receives his money and account of sales direct from the man who sells his goods.

MR. PEARSON—All charges follow the stuff?

MR. GOODRICH—Yes. In that way we get the cheapest freight that it is possible to get. The railway company simply puts in the car, and when it is loaded hauls it. That is all the company does.

MR. PEARSON—Are the cars packed with ice?.

MR. GOODRICH—If the shipper desires, yes.

MR. PEARSON—The railroad company puts that in?.

MR. GOODRICH—No, we do that ourselves. At this time of year we are loading out sweet potatoes, that go into half a dozen cities. They are shipped in the same cars we used in the summer for fruit, viz.: refrigerators. They will take out sweet potatoes and land them in Chicago in two days and one night.

MR. PEARSON—In sacks?

MR. GOODRICH—In barrels; never in sacks, unless it were something we can pack in a very small sack.

MR. PEARSON—Do you mean that there is no subscription and no annual fee to be paid?

MR. GOODRICH—You can't have a stock company without paying for it. You must own the stock. The membership fee

covers the stock. It has to be a bona fide stock company, on the same plan as starting a bank or a manufacturing establishment.

MR. PEARSON—How much stock is generally required to insure successful operating?

MR. GOODRICH—There is not very much needed. Five thousand dollars will be sufficient.

MR. PEARSON—Do you mean that stock will pay dividends?

MR. GOODRICH—If you want to make it that way you can. We always have a surplus.

MR. PEARSON—Suppose I take stock and hold it four or five years, who is going to pay any money out of which I shall get a dividend?

MR. GOODRICH—To explain that, would require too much time.

MR. PEARSON—Not very much time. If I knew how it was done I could tell it in two minutes.

MR. J. W. STANTON—I can explain my plan in two minutes. The shipping association takes the fruit at so much a package, say twelve cents a case; no matter what the railroad freight may be, we figure the amount so as to cover expenses and have a surplus. We have a man in Chicago who unloads it and pays the freight. The unloader pays the freight and collects from the different firms, according to our rate. At the end of the season we have a settlement with him, and there is always a surplus that goes into the association's treasury.

MR. GOODRICH—And in addition to that, if we consign what we call an outside car, we give the entire car to one company; they sell it on less than ten per cent., or five per cent., or four per cent., perhaps. We charge the shippers ten per cent. and that makes a rebate which goes into our treasury, which makes the dividend which you want to know about.

MR. PEARSON—You skin them a little?

MR. GOODRICH—No sir. That is the fund with which we run the machine.

Mr. Morrell—In Michigan recently there has come up a plan that is being worked to great satisfaction, and it rather beats sending your fruit away on commission. They sell at home. Buyers to-day are looking for car loads of uniform goods, and not car loads that are not uniform. I have no interest in it, but I know where there is one of the central packing house co-operative associations that is working very successfully. I can give you the modus operandi of handling them. I can give the results pretty neary in dollars and cents. An association is formed, growers bring their fruit to the central packing house, where it is crated and under one management. The management gets in correspondence with buyers in the large cities and the buyers come and select the goods they want and pay for them right there before they are moved. The plan is working with apples and peaches and all the crops that grow there, giving the greatest satisfaction. It furnishes a place where a buyer can go at any time and select a car load of No. 1 fruit or mixed fruit, or just what he may need for his trade. And there are always plenty of buyers. The fruit is assorted and packed in a very large packing house, which has an ice house adjoining. Each grower can have his fruit kept by itself if he desires. The manager sells the fruit for the best price he can get.

Understand this is a stock company and don't pack for everybody, by any means.

Mr. Pearson asks where are you going to get your dividend? This company owns its buildings and has a little money to do business with. If any man wants to come in they take action on him, and if he is a man of the character that suits them they will take him in. Now the best men are falling over each other to get into these associations.

Mr. Nelson, Missouri—Co-operation shipping is being worked very successfully amongst the strawberry growers and peach growers.

Mr. Hobbs, Indiana—The American Fruit Growers Association, which was organized probably two years ago in

Chicago, was to operate for the whole United States, and distribute our fruit just where it was wanted direct from the shipper. What were the weak points about that?

MR. STANTON—It wasn't mutual in its benefits.

MR. HOBBS—Did the benefits accrued go chiefly to the officers?

MR. STANTON—Yes.

MR. MORRELL—It was an effort to down the other fellow's commission houses.

THE SEASON'S CAMPAIGN AGAINST SHE SAN JOSÉ AND OTHER SCALE INSECTS IN ILLINOIS.

PROF. S. A. FORBES, State Entomologist, Urbana.

When I made my report to you last year, at your annual meeting, of the occurrence of the San Jose scale in Illinois and the condition of infested premises, we had not finished our inspection of suspected importations. At that time ten infested localities were twelve separate colonies, now there are twenty-two. Then the scale was known to be distributed in eight counties only, now we have found it in fifteen—from Ocle and Kane on the north to Pulaski on the south, and from Adams on the west to Clark, Edgar and Wabash on the east. The entire list of infested localities is as follows: Monroe Center, in Ogle county; Dundee, in Kane county; Tremont, in Tazewell county; Qnincy and Paloma, in Adams county; Auburn and New City, in Sangamon county; Tower Hill and Herrick, in Shelby county; Ernst, in Clark county; Vermilion, in Edgar county, and a farm about five miles from that place; Collinsville, in Madison county; Mascoutah, in St. Clair county; West Salem, in Edwards county; Mt. Carmel, in Wabash county; Richview, in Washington county; Sparta, in Randolph county; and Villa Ridge, in Pulaski county.

The precise condition of affairs for the new localities is as follows:

Near Herrick, in the southern part of Shelby county, two small trees were found, four or five feet in height, completely incrusted with the San Jose scale. They were in a small fruit plantation belonging to Mr. S. W. Buchanan, between two and three miles north of the town. They were obtained in 1895 from an Ohio dealer who does not raise trees himself. Adjacent stock, consisting of pear-trees, grape vines,

apricots, red and black raspberries, and also an apple orchard but a little distance removed, were all inspected carefully by an assistant of the office, Mr. Braucher, September 7, 1897, but without further discovery of the scale.

On a farm near Sanford, Ind., but across the Illinois line, in Edgar county, Ill., in a small plantation of about two thousand currant bushes, a considerable number were found by the owner infested by a scale which proved on examination at my office to be the San Jose species. The infested bushes were all of the "red Dutch" variety, "cherry" currants mixed with them not showing the scale. These infested bushes had been obtained in 1893 from a nursery company at Rochester, N. Y. Mr. Howard had about fifteen acres of fruit, but found the scale on nothing but the currants mentioned. He promised to burn all the currant bushes in this acre field, plow it up, and plant it to corn. As the infested patch was not immediately connected with any other fruit plot, it is possible that there had been no extension of this imported colony.

From Mr. Howard's premises the scale was transferred by sale of currant bushes to those of Mr. A. H. Evinger at Vermilion, in the same county but about five miles away.

At Collinsville, in Madison county, in an orchard of about five acres belonging to Charles Eckert, five or six large trees (apricot and plum) were found slightly infested at one end of the orchard, and a small apple-tree near the center of it was extensively attacked by the San Jose scale and other orchard scales. The latter tree had been received from New Jersey three years before, and had been noticed by the owner as unthrifty from the beginning.

At Mascotah, in St. Clair county, about ten trees were found infested with the San Jose scale in one corner of a neglected fruit plot on a town lot. The infested trees were peach, apple and cherry. These had been imported originally from New Jersey by John Baisch. The property has since changed hands.

At Mt. Carmel, in Wabash county, a single infested plum-tree was first found by Dr. J. Schneck, specimens of which he sent to the office, but subsequent visits of assistants discovered the fact that a large number of fruit trees, dispersed over at least six city blocks, were infested with the scale, many of them badly so, and that the introduction of the pest must date back several years. The number of owners of infested premises and the great variety of sources from which trees had been obtained by them make it now im-

practicable to trace the original importation to its source. Peach, apple, pear, cherry, quince and plum trees, rose bushes and currant bushes were all infested at this place.

From Villa Ridge, in Pulaski county, Mr. C. C. Spaulding sent me, the first of March, pieces of twigs from a Transcendent crab-apple tree obtained from a tree dealer in Ohio in the fall of 1894, the condition of which had attracted his attention sufficiently to lead to his treating it with pure kerosene. An examination of these specimens showed that they were thickly covered with the San Jose scale. Further search by Mr. Spaulding, made upon the receipt of this information, resulted in the sending of several additional specimens bearing scale insects, none of which, however, were of this species; but a subsequent inspection made by Mr. R. W. Braucher, an Assistant of the office, showed that one large and ten smaller peach-trees growing in the immediate neighborhood of the tree originally worst infested also bore the scale in comparatively small numbers. An inspection of the other trees and shrubs in the vicinity was made with only negative results.

In November, 1897, an inspection was made, in response to the owner's request, of a nursery near Dundee, Ill., devoted mainly to evergreens but containing a block of about two thousand deciduous shade, and fruit-trees and shrubs. In the southeast third of this block the San Jose scale was found on apple, peach and mountain ash-trees, the apple being the worst infested. The facts ascertainable concerning the history of these trees left the origin of the scale at this place in doubt.

Later investigation of the origin of the infested stock at Herrick, Sandford and Villa Ridge led to the conclusion that it was all derived through second hands from the infested New Jersey region which has been the main source of difficulty with the San Jose scale in this state.

Besides the above localities, new to the state, considerable new developments are to be reported from Tremont, Ernst and Sparta. At the first of these places, where the scale was supposed to be limited to a few trees in one part of the infested orchard, it has since been found so widely scattered as to involve practically the whole premises. At Ernst, where it was last year discoverable only upon a single tree, which was promptly and thoroughly destroyed by the owner, it has now been found distributed to nearly all the infested premises. At Sparta and its vicinity is to be found by far the most serious and difficult situation in the state.

Thoroughgoing inspection of all the orchards in the neighborhood of those known to be infested last year has led to the discovery of the scale in larger or smaller numbers in more than sixty orchards distributed over an area of about twenty-five square miles. As these orchards are in a country still largely covered with woods, and as the osage orange hedge is common in this neighborhood, the scale is undoubtedly distributed more or less generally outside the orchards themselves. Indeed, it was found by Mr. Braucher quite abundant upon a roadside hedge three-quarters of a mile from the nearest fruit-trees. Fortunately there is no nursery in this region, and there is very little likely to be any trade in buds or cions from this infested district, the facts concerning which have been made widely known.

The question has been frequently asked me if Northern Illinois is not too cold for the permanent continuance of the San Jose scale, and if this does not explain in part the fact that most of the cases reported are from the central and southern parts of the state. The continuance of the scale for four years on a single tree in Ogle county, near the northern line of the state, is convincing evidence of its capacity to endure low temperatures and to thrive, notwithstanding exposure to severe winter weather, as this tree was quite generally covered with the scale. From reports of the United States weather bureau, kindly sent me by Mr. Charles E. Linney, observer in Chicago, it appears that the temperature record in Oregon, Ogle county, reached 20 degrees below zero (Fah.) in 1894, 26 degrees below in 1895, and 15 degrees below zero in 1896. Indeed, the entire month from the 20th of January, 1895, to the 20th of February following was a period of extreme cold, probably lower than any like period since systematic records have been kept within the state.

Concerning entomological enemies of this scale I have nothing of importance to report additional to what was given you in my paper of last year and in the discussion following it—pages 138-142 of your last report.

A fungus parasite, of which I made no mention last year, has now been found fatal to this scale, and capable of propagation both by artificial cultivation and by contact with infected scales. This fungus (*Sphærostilbe flammea*), received by me originally from Prof. Rolfs, of the Florida experiment station, was cultivated without difficulty on corn-meal batter made with milk, and cultures so made were used by Prof. John B. Smith, to whom they were sent for experiment in

starting a fungous disease among San Jose scales in New Jersey. Some more elaborate experiments have also been made by Prof. Rolfs himself in Florida.

This fungus parasite is apparently easily introduced into an infested orchard by spraying with water containing the ripened spores. It is essential to success, however, that the surface so treated should be kept moist until the spores have had time to grow, as they are killed by drying out. To this end the surface sprayed may be covered with bagging, which should be wet up from time to time as may be necessary. Once introduced the fungus spreads by contagion, although less rapidly and extensively than many other species. I am of the opinion that the disease produced by it may prove an important aid in restraining the multiplication of the scale where it has got beyond the reach of insecticide measures for its complete destruction. This method has the additional merit that it will probably take effect upon all orchard scales if applied at the season of their activity, since it has already been found to attack a considerable variety of scale insects.

In pursuance to plans reported to the society last year and instructions given to your special committee, an earnest effort was made during the last session of the legislature to obtain the passage of laws for the establishment of a board of control, with necessary powers to make all needful regulations for the control of insect and fungus pests in this state and for the inspection and certification of fruit stock intended for sale. A bill drawn up on the lines indicated in the committee report published in the Horticultural Transactions of 1896, pages 123 and 124, was passed in the senate by a unanimous vote of all the members present, with an emergency clause which would have given it immediate effect. In the house this bill was referred to the appropriation committee, by which it was never reported.

As a partial substitute for this measure an appropriation was recommended by this committee as an item in the general bill for the expenses of the state government to the amount of three thousand dollars "for experiment, publication and instruction concerning the San Jose scale, and for the inspection and disinfection of orchards and nurseries." This item was passed by both houses, and the appropriation became available July 1. It was drawn up at once to complete the inspection of suspected premises throughout the state with the result to discover the additional localities already mentioned. In July the following circular was issued from my office:

An appropriation of $3,000 was made to the State Entomologist of Illinois by the General Assembly at its last session, "for experiment, publication, and instruction concerning the San Jose scale, and for the inspection and disinfection of orchards and nurseries." It is the earnest desire of the Entomologist that this sum may be used to the best advantage to disclose the present condition of the fruit interest of the state with reference to this pernicious insect; to exterminate the scale promptly wherever in Illinois it has been or may be found; to protect the nurseryman and fruit grower as far as practicable against the chance of future invasion; and to assure the customers of Illinois nurserymen and of other dealers in fruit plants that Illinois stock offered for sale is free from this pest.

It was the evident intention of the legislature to trust the control of this important matter to the public spirit and enlightened business enterprise of the private citizen, aided in every practicable way by the official Entomologist. It is the purpose of this circular to make to all interested a cordial offer of information, advice, aid, and supervision of insecticide operations, as far as the resources at our disposal will permit; and also to ask early and full information from all concerned with reference to the occurrence or introduction, known or suspected, of the San Jose scale in Illinois.

LOCATION OF COLONIES.

It must be our first endeavor to discover promptly and to locate exactly all the colonies of this insect now established in the State. Eighteen such colonies have already been found, nearly all by an inspection of premises to which we have had reason to believe that nursery stock was imported at a time when the nurseries from which it came were infested by this scale. It is of great importance that we have at once full information concerning all importations into the State from places and at such times as to make it possible that the San Jose scale was conveyed by their means. I consequently earnestly request all to whom this notice may come that they will send to this office prompt and precise information into Illinois of nursery stock or other trees or plants subject to its attack, which were grown in any of the following localities within the time mentioned after each: California, since 1873; eastern New Jersey, between 1886 and 1894; Maryland, since 1887; Florida, since 1889; Washington State and Ohio, since 1890; Georgia and Louisiana, since 1891; Long Island, N. Y., since 1892; Delaware and eastern Massachusetts, since 1893.

The plants thus far found subject to injury by the San Jose scale are the apple, pear, peach, apricot, plum, cherry, quince, grape, raspberry, blackberry, gooseberry, currant, and persimmon among our fruits; the chestnut, hickory, pecan, English walnut, black walnut and almond among the nut-bearing trees; the oak, basswood, elm, catalpa, birch, poplar, and willow among our shade and forest trees; and a large miscellaneous list of trees and shrubs, including the rose, thorn-apple or red haw, crab-apple, wahoo, spiræa, loquat, cotoneaster, flowering quince, flowering currant, acacia, alder, and sumach. This insect also seriously infests the osage orange, spreading with the greatest facility through the thick growth of the wayside hedge.

It is very important that all supposed or possible cases of the appearance of the San Jose scale in Illinois be reported at once to this office, accompanied by twigs or pieces of bark illustrating the supposed attack. To all communications accompanied by such specimens prompt reply will be made, and energetic measures for its destruction will be taken wherever the scale is thus detected.

EXTERMINATION OF THE SCALE.

To owners of premises on which this scale is found the Entomologist will give all information and assistance necessary to the prompt extermination of the pest, sending an agent to inspect the situation and surroundings; to give personal instruction as to methods of procedure, and to supervise and direct insecticide operations. An efficient spraying apparatus will also be furnished for use where this cannot otherwise be readily obtained. This proposition is made on the sole condition that the owner will destroy stock hopelessly diseased and will provide the necessary insecticide and the labor for its preparation and for its distribution to infested stock, and that the whole operation will be carried on and continued to the satisfaction of a representative of this office. Experience elsewhere has shown that expert assistance of this sort is, as a rule, necessary to insure success; and expenditure of public money in such an interest can be justified only on condition that everything is done needful to the accomplishment of the end desired.

The San Jose scale is commonly regarded by those best informed concerning it as the most dangerous and injurious insect enemy of American fruits. It now occurs in Illinois in comparatively small colonies, where in most cases it can probably be exterminated at small expense. Considering the

enormous loss which is likely to fall upon the horticulture of the State if this highly destructive insect is allowed to spread generally throughout our orchards and to infest our nurseries, it is to be hoped that every person upon whose property it appears will regard the situation in the light of the public welfare as well as in that of his private interest, and that he will take without hesitation such measures as may be necessary to protect both.

INSPECTION OF NURSERIES.

As a guarantee of the freedom of Illinois nursery stock from this and other notably injurious insects likely to be conveyed in trade, the Entomologist further offers to inspect the premises of nurserymen and other dealers at least once each year, and to give to the owner after such inspection a certificate setting forth the precise facts apparent with respect to the presence or absence of the San Jose scale and other insects dangerous to the property of customers. Such inspections will be made and such certificates issued only on application to this office, and on condition that the actual traveling expenses of the inspector and a *per diem* of three dollars a day are paid by the owner of the inspected property. Special inspections of nursery stock imported for sale will also be made, so far as this may be practicable, on the same condition and terms; but to insure such inspections requests should be made as long as possible in advance of the receipt of importations, with at least an approximate indication of the time when they are expected to arrive. Trips may thus be arranged which will provide for the largest possible number of inspections, and reduce the cost of each. Statements of receipts and expenditures under this head will be reported to the Governor and published in the regular reports of the State Entomologist of Illinois.

BULLETIN OF INFORMATION.

An illustrated bulletin of information concerning the San Jose scale and its distribution in Illinois has been published by the State Agricultural Experiment Station (Bulletin No. 48), and will be furnished on application to Prof. Eugene Davenport, Director of the Station. A later and more comprehensive article upon the subject will appear in the forthcoming biennial report of the State Entomologist, which will probably be ready for distribution this fall.

S. A. FORBES,

University of Illinois, STATE ENTOMOLOGIST.
Urbana, Ill., July 6, 1897.

The above offer is to inspect and certify nurseries has been quite generally accepted, and eleven nurseries have now been examined by my inspectors with reference to the condition of growing stock, as follows:

Bloomington, four nurseries; Centralia, one nursery; Decatur, one nursery; Dundee, one nursery; Princeton, one nursery; Randolph County, one nursery, and Villa Ridge, one nursery.

In all cases but one, certificates were given of freedom from the San Jose Scale, and such additional certificates concerning the freedom of stock from other insects as the facts ascertained would clearly warrant. As the nursery stock which it was proposed to market was still standing in the rows when these inspections were made, no statement could be made concerning insects liable to infest the roots. Indeed, the use of the inspection system involves may difficulties unless it is made general and regulated and enforced by law. It is quite impossible for the inspector or purchaser to assure himself that certificates of inspection given are attached only to stock which has actually been inspected. It is also quite impracticable for any inspector to examine so fully and cerefully the entire stock of a large nursery as to insure to the purchaser the freedom of the stock from all dangerous insects and fungus parasites. Particularly is this the case if the inspection must be made before the trees are taken from the ground. On the other hand, even such an inspection as is practicable will have very great value if made by a practiced expert, and there does not seem to me to be any efficient substitute for it at the present time.

The disinfection of the Quincy orchard, authorized at the expense of this Society, and partially reported on last year, was continued by a second treatment with the soap-suds spray begun under Mr. Blair's supervision March 27, and finished by the owner of the premises, Mr. Kiem, March 29. The method differed from that of the first treatment only in the use of an extension rod to carry the spray nozzle along the larger limbs.

To test the effect of this treatment, the scales remaining upon the twigs, portions of branches, and cuttings from the bark of the trunks of various trees were examined in early spring and sent in by the owner. All the specimens of the San Jose scale which were thus critically scrutinized were dead.

To determine more exactly the effect of this treatment, an assisstant, Mr. R. W. Braucher, was sent to Quincy in

July, 1897, with instructions to make a critical examination of every infested tree in the orchard and, if necessary, of the hedge and other vegetation in the vicinity liable to attack by the scale. At this season of the year the presence of living scales was of course more easily recognized than in early spring, since the season of reproduction was at its height, and young scales of all ages would be found wherever any were still alive. The following statement is drawn up from his report made August 2:

Of the twenty-six trees in the orchard which had evidently been infested, living scales were found upon seven, generally in crevices or holes in the bark, where they were protected from the soap solution, but in several cases upon the exposed surface, where they had doubtless been covered by a mass of scales so thick that the soap-suds did not reach them.

The worst infested tree remaining in the orchard was an apple tree which had been left as an experiment when others in similar condition had been destroyed. The trunk and larger limbs had been thoroughly incrusted, although most of the scales had now disappeared. In protected places which the rains could not reach, the dead scales could still be picked off several layers deep. Mr. Kiem reported that in the early part of the spring a handful of them could be got in a short time by scratching the bark with the finger nail. This tree had been sprayed five times, while the other trees were sprayed but twice. A few living scales were still to be found on the trunk and limbs, a part of them in holes or crevices of the bark, and others on the smooth surface of the limbs. In picking off the masses of dead scales packed into crevices in the bark, sometimes one, and occasionally two living scales were found at the bottom of the mass, but in most cases every one was killed. The effect of the treatment in permitting the revival of this originally thrifty tree was very conspicuous. The old bark had been generally killed, but the tree had made a fine growth this summer, cracking the dead bark. This condition of things was also noticed on other apple-trees, wherever the scales had been very abundant.

It is thus made evident that an originally healthy tree, in the complete possession of the scale, may sometimes be saved by a destruction of the insects themselves. If the surface of the trunk and larger branches of this tree had been scraped and brushed to remove the incrusting scales and the rough dead before spraying with whale-oil soap, it is quite probable that not a single scale would have survived.

A large peach tree, six-year-old, the worst infested of those left standing and still thickly coated with the dead scales on the trunk and larger limbs, was also thoroughly examined. No living scales were found on the trunk or on the larger limbs near their origin, but a considerable number were seen on both the upper and under surfaces of the smooth bark of the limbs in the middle of the tree. According to Mr. Blair's report, this tree was less thoroughly sprayed than many because of the large amount of fine brush in the top, which made it very difficult to distribute the spray to all parts of the tree. This difficulty would have been removed if the tree had been vigorously trimmed before spraying. Although badly infested with borers, it had made a very good growth during the season, like most of the other peach trees treated.

Two or three living scales were found on the trunk of another apple tree, the bark of which was rough and peeling off in patches. It had not been very badly infested, and was now making an excellent growth and bearing several sound apples.

Upon the trunk of still another apple tree, more thickly infested and with rougher bark, one or two living scales were found. On three other apple trees, three or four years younger than the foregoing, a few living scales remained at the base of the trunk, either under the protection of the ragged bark or under masses of scales. When these trees were sprayed in spring the ground was covered with a mulch of manure, about two or three inches deep around the trees, which possibly protected the base of the trunk in part from the action of the spray. One of these three apple trees was the worst infested at the present time of any tree in the orchard. The living scales were quite numerous near the ground, and were also distributed sparsely over the trunk and larger limbs. Immature scales were found on all three of these trees, established under pieces of bark which had recently cracked away from the deeper layers. Two mature females were noticed on these trees, each with a number of young beneath the maternal scale.

It is commonly supposed that a spray of whale-oil soap of the strength used in these treatments is destructive to the fruit buds, but the general appearance of this little orchard would suggest rather that the treatment which it had received was immediately beneficial in all respects, at least to the apple-trees. These not only blossomed freely but set a very good crop of fruit, which the owner was sure was much

less wormy than that in neighboring orchards. Plum-trees also were in bearing, with no evidence of a diminution of their crop. The peach blossoms in this region were all killed by frost. Raspberries and blackberries, sprayed both in fall and spring, were fruiting abundantly.

As a general conclusion concerning the results of this experiment, it was Mr. Brancher's judgment that ninety-nine per cent. of the scales in this orchard were killed, and that the remainder would probably have been destroyed if the surface of the trunks and large limbs had received a suitable preliminary treatment with a scraper and brush. It is very evident, however, that the treatment ordinarily recommended at the present time for the extermination of the scale, namely, two sprayings in the year (in fall and spring respectively) with a strong solution of whale-oil soap, cannot be relied upon to do more than to keep the attack in check. As likely to be applied by the ordinary orchard owner or the employes of the nurserymen it would almost certainly fail much more conspicuously than in the case here described. This Quincy orchard will be treated again next fall and, if necessary, the following spring, in the light of our experience at the time.

In consequence of the large increase in the number of localities known to be infested, and especially of the great extent of country now occupied by the scale in the vicinity of Sparta, in Randolph county, I find myself greatly embarrassed for lack of funds with which to carry out the insecticide operations that the situation clearly requires. As the scale, so far as we now know, is extensively distributed in this State at no single point except Sparta, I have thought it my duty to do whatever the funds and conditions would permit for its complete destruction at as many infested points as practicable, and have subsequently begun operations with two sprayers—one an ordinary hand apparatus and the other a spraying machine worked by a gasoline engine. The infested premises at Dundee, Monroe Center, and Mascoutah have already been thoroughly treated, and the work is now in progress elsewhere.

The following general recommendations of preventive and medical measures are taken from an article on this scale prepared for my Ninth Report as State Entomologist, now going through the press:

PRECAUTIONARY AND REMEDIAL MEASURES.

The obscure character of the San Jose scale and the difficulty of ridding premises of it when once infested, make general and precautionary measures the main reliance against its ravages. The following suggestions are made in a form to apply both to the business of the nurseryman and to the protection and disinfection of the premises of his customers.

1. Great care should be used in selecting stock. With the numerous possible sources of contamination now scattered throughout the country, no fruit grower is really safe who does not first assure himself that the premises from which his young stock may be obtained are themselves free from this insect, and who does not also critically inspect every portion of every tree and shrub liable to attack by this scale which comes to his premises. The best evidence of the absence of the scale from any nursery is the high reputation of the nurseryman for care, business method, and scrupulous honesty. Stock from such a nurseryman in a district known to have been infested by the scale in the past is perhaps a safer investment than indiscriminate purchases made from less reliable men in regions where this scale has not yet been detected. Confirmation of this view is given by the fact that among the numerous importations from eastern nurseries examined by us during the last few months, only one importation made *after the discovery of this scale* in those nurseries has yet been found infested.

2. A very important additional safeguard is a certificate of inspection, issued by some official expert, certifying to the freedom of the stock in question from injurious insects and fungus diseases. The time seems rapidly approaching when official inspection and certification will be a necessity of the trade. Too much reliance must not be placed, however, upon the absolute value of any inspector's certificate to be absent from the San Jose scale on any suspected premises or from any lot of inspected stock. It is a physical impossibility to assure one's self beyond all possible doubt that not so much as a single fertilized scale is present on even a single tree, and one such scale, if overlooked, may give rise within a very brief time to a destructive colony. Indeed, no critically careful inspector will issue unqualified certificates of freedom from injurious insects or fungus diseases. It is further to be remembered, that an inspection of the premises of a nursery and a certificate of freedom from the scale are not a guarantee of all stock which may be shipped out by the owner, since a large percentage of that sold by most nurserymen

originates elsewhere. The rearing of nursery stock has now become largely specialized in localities, to the great advantage, indeed, both of the dealer and his customer. The certificate referred to should consequently apply immediately to the entire lot of stock purchased; or, if it is a certificate of inspection of premises only, it should be accompanied by a statement from the nurseryman to the effect that the stock sold was grown on the premises inspected, giving also the date of such inspection and the time when the stock was taken up. If a growing season or any part of such a season has intervened between these dates, the value of the certificate is thereby impaired.

3. The nurserymen should fumigate all suspected stock with hydrocyanic acid gas before sending it out. This is a simple, convenient, and comparatively inexpensive process, and the most effective known means of securing a complete destruction of living insects, including the San Jose scale. For this purpose the stock may be piled up closely and covered with a large sheet, beneath which the gas is generated by putting into a glazed earthenware vessel, first three ounces of water, next one ounce of commercial sulphuric acid, and finally one ounce of fused potassium cyanide (98 per cent.). The vessel should then be placed at once under the sheet and left for at least an hour. The above quantity should be used for every hundred cubic feet of space. For large nurseries permanent provision for disinfection may profitably be made in the form of a small, tight building conveniently arranged for the reception of large lots of stock, and for the introduction and removal of the insecticide ingredent.

A cloudy day is best for the work if done in the open air, or, if this cannot be had, the stock should be fumigated after sunset. Dormant nursery stock is not easily affected by the gas, and there is no danger to exposed roots. Sulphuric acid and the potassium cyanide are deadly poisons, and the greatest care should be taken not to inhale any of the gas emitted by the mixture, as it is deadly to man and other animals as well as to insects.

4. Where the above fumigation method is impracticable, as in the case of the ordinary purchaser, reliance may be placed upon thoroughly saturating the surface of suspected trees and shrubs with a solution of whale-oil soap, two pounds to the gallon of hot water.

5. All stock sent out by the nurserymen should bear the name of the nursery and, if practicable, a copy of a certificate of inspection containing the information mentioned under 2.

6. Examples of all stock suspected to bear this scale should be sent at once to the address of the State Entomologis, at Urbana, Ill., with a request for examination and report.

7. When the fact is established that any trees or shrubs planted out are infested with this scale, all such fruit plants should be destroyed by fire if practicable. The loss thus incurred will commonly be trivial compared with that which will be likely to follow if less radical measures are taken. This is particularly incumbent upon the owner when the scale has been lately introduced and is as yet confined to a small number of trees, especially if these are isolated.

8. Where such destruction is impracticable, the infested trees or bushes should be trimmed closely in fall, after the leaves have dropped, scraped to remove loose bark, and sprayed very thoroughly twice (once in fall and once in early spring), and repeatedly thereafter if necessary, with a solution of whale-oil soap, two pounds to the gallon, as described in the Quincy experiment, an account of which is given in this paper.

9. As a secondary precaution all trees in an orchard any part of which has been infested should be whitewashed occasionally throughout the summer so as to keep the trunks and branches as thoroughly covered with lime as possible.

"We wish particularly to impress upon the minds of fruit growers that as soon as this insect is found to occur in an orchard the most strenuous measures must be taken to stamp it out. No half-way steps will suffice. The individual must remember that not only are his own interests virtually at stake but those of the whole community in which he resides. He may think that he cannot bear the loss, but the loss in consequence of the slightest neglect will be much greater. The fact too, that there is a community of interests among fruit growers in this matter must not be lost sight of. Fruit growers must be mutually helpful in an emergency like this." *

* From "The San Jose scale, its occurrences in the United States, with a Full Account of its Life History and the Remedies to be used against it." (Bull. No. 3, U. S. Dept. Agt., Div. Ent. p. 66.)

DISCUSSION.

MR. CALLAWAY—Can strawberry plants carry scales?

PROF. FORBES—No. Scales have been found on the apple, pear, peach, apricot, plum, cherry, quince, raspberry, black-

berry, grape, gooseberry, currant, persimmon, hickory, pecan, English walnut, almond and a large miscellaneous list of trees and shrubs.

MR. YOUNG—Does the scale affect the leaves so they will fall?

PROF. FORBES—The scale affects all parts of the tree.

MR. BUCKMAN—How long does it take to treat a tree by fumigation?

PROF. FORBES—One hour.

MR. BLAIR, of Missouri—Do forest trees become infested?

PROF. FORBES—Quite a number of varieties do. So also does hedge.

MR. HOBBS—Have you ever found them located underground?

PROF. FORBES—I have not, but there is some evidence that they might infest the upper part of the roots.

MR. H. AUGUSTINE—How rapidly do the scale multiply?

PROF. FORBES—A single female scale may in a single season give origin to about one billion, that has all been figured out carefully. It is not a matter of guess work at all.

MR. JOHNSON—If these scales are known to infest forests, might it not be when you get through with the orchard you would find the woods full of them?

PROF. FORBES—About Sparta I think perhaps that might be true. We intend to spray the woods there for a considerable distance around. We do not propose to leave any stone unturned. I would spray the whole twenty-five square miles in the Sparta country if I had the money to do it with. I think it would well pay the State of Illinois to do it.

MR. BARNARD—How about California?

PROF. FORBES—In California the situation differs according to the part of the state. In the Southern part of the state the plague has to a large extent disappeared. In bearing orchards there is comparatively little of it. Old abandoned orchards may be somewhat infected, but no great importance is attached to it. In the Northern part of the state, however, it is kept down only by continued watchful-

ness, and the persistent use of insecticides by the fruit growers. They don't expect to get entirely rid of it but they believe they can raise fruit notwithstanding it. It is a continual fight with them. The changes in Southern California are climatic. Entomologists there have reached the conclusion that the mid-summer heat and drouths have weakened the scale in the course of years so that it no longer has the same vitality it formerly had. I don't think we can hope for the same climatic relief they have in Southern California.

MR. GOODRICH—Do I understand that wherever the scale is reported to exist you undertake to exterminate it if the owner of the orchard will stand the expense of the insecticide?

PROF. FORBES—We undertake it, and will do it so long as the money holds out.

MR. GOODRICH—Are two sprayings sufficient?

PROF. FORBES—They are sufficient according to the observations of entomologists elsewhere. Two sprayings are all we can hope to undertake with the present appropriations.

MR. GOODRICH—Do you know of any parasite that is distructive to this scale?

PROF. FORBES—Yes, three. One true parasite and the other two are carniverous, they simply devour the scale. But they are not such as warrant us to trust in their efficiency at the present time. In orchards that I have inspected no visible effect on the scale is shown by these distructive parasites.

MR. H. AUGUSTINE—Mr Chairman. In view of the serious damage with which the fruit growers of Illinois are threatened by the presence in certain parts of the state of the San Jose scale I would move that the president of this society name a committee of three, called a legislative committee, to cooperate with Prof. Forbes and lay plans during the coming year with which to go before the legislature and secure such legislation as may be found necessary to exterminate the present pest, and to prevent if possible the further introduction of them into this state.

The motion was seconded and on being put by the Chair was unanimously adopted.

The Chair appointed as members of such committee on Legislation, H. Augustine, H. M. Dunlap, J. W. Stanton.

Mr. Nelson, of Missouri—Would not fumigation with brimstone answer the same purpose as that referred to by Prof. Forbes?

Prof. Forbes—I am afraid not. It is not sufficiently penetrating. The fumigation I have spoken of is about the only successful fumigation I know of. I don't know what the effect of brimstone would be on vegetation.

Mr. Morrell—It is pretty bad. It will stand a little.

Mr. Bryant—How about the use of kerosene?

Prof. Forbes—I have made no experiments myself with kerosene, and I have determined not to recommend it until I can do so from personal knowledge. Some of the scientific men are of the opinion that the use of kerosene on trees is dangerous, especially when applied by the fruit grower generally. If used at all it should be used with such caution as to render it impracticable for general use.

Mr. Morrell—I do not believe from my experience and observation that you ought to spend one minute's time in talking about the use of kerosene. It is a dangerous thing to talk about even. Prof. Forbes has gone further into this subject than any man we have access to, and he recommends whale oil soap treatment, and if it does the business and does not kill the tree, it is the only thing for us to think about. In Michigan we have come to that conclusion, and our State Inspector is working on those lines, and not making any experiments outside of that.

Mr. Black—Whale oil soap as used is not injurious?

Prof. Forbes—No. The only injury which might be expected from the use of that soap is the possible distruction of the fruit buds during the year in which the insecticide is applied. In our Quincy experiment even that injury did not occur. The party on whose orchard we operated had a better crop than his neighbors.

Mr. Morrell—Were there any peach trees in the orchard?

PROF. FORBES—Yes, there were peaches, apples, pears and plums.

MR. MORRELL—Well if it did not hurt the peaches the rest will be all right.

PROF. FORBES—The peach blossoms were all killed by frost last year. But the apple and plum and the raspberry and blackberry were all apparently unaffected.

MR. PERRIAM—A man who makes the assertion that he can pour kerosene oil on a tree and not injure it is not worthy of the confidence of this Society. Kerosene oil will injure the tree.

MR. HOBBS, of Indiana—There will be a difference of opinion in regard to the use of coal oil on trees from the fact that different kinds of trees are affected differently. Peach trees are very sensitive to arsenical preparations or coal oil, and so also is the apple. There is a difference in the grade of oil. It has been proven you can spray oil lightly anywhere over trees if you do it when the air is dry, and the conditions are favorable for the rapid evaporation. You can apply it under those conditions successfully; but those conditions must be right. It must be a light oil that will evaporate quickly under favorable atmospheric conditions. I think, as Prof. Forbes has well said, it should be used, if at all, with great caution.

MR. MORRELL—I have heard of gasoline being used on a cherry tree with good effect. I would not recommend it, although it might be worth the experiment if made by an expert.

MR. BRYANT—What does the whale oil soap cost?

PROF. FORBES—It costs in New York three and three quarter cents a pound, which, together with the freight, brings it to about four cents a pound. We bought it of Leggett Company, in New York, simply because we knew by going to them we got an excellent and uniform article. They handle but one brand. I have no doubt there are others making just as good soap, but I don't know whether they can be depended on or not. There is a great difference in whale oil soaps and in their insecticide qualities.

MR. BRYANT—How about whitewash as an insecticide?

PROF. FORBES—I do not know that it has any insecticide qualities.

MR. BUCKMAN—What is there about whale oil soap so different from other soaps or mixtures?

PROF. FORBES—There are other soaps besides whale oil soap which do considerable good; but there is no other soap that has yet been used that has been found to be so efficient as whale oil soap. Where we are dealing with an insect like this it seems almost necessary we should have the best thing we know of.

MR. BLACK—Is it not a fact whale oil soap is cheaper than any other soap?

PROF. FORBES—I think it is about as cheap as anything you can get.

MR. STANTON—Mr. Buckman asks the question why some other soap would not do just as well? Is it not a fact the reason other soaps will not do as well is because they have not the strength?

PROF. FORBES—I have not experimented with any other soaps, I cannot say of my own knowledge.

MR. MORRELL—When we have a good thing that has been tested we ought to stick to it until the experts have discovered something better. Prof. Forbes has found whale oil soap a good thing and we should stick to it and let the experts discover a better thing and demonstrate it to be such before we take any chances.

HOW TO CONVERT INFERIOR PRODUCTS OF THE ORCHARD INTO MERCHANTABLE PRODUCTS.

F. C. JOHNSON, Kishmaukee.

Mr. President:

How to convert inferior products of the orchard into merchantable products or, in other words, how to realize a satisfactory profit from small inferior apples, usually called cider apples, is a hard question and I shall not undertake to answer it, but shall simply offer a few hints.

Theoretically, with all our horticultural societies and papers, we should have less and less of this class of apples year

by year, but where there is a good crop of apples, as a rule, there are plenty of cider apples and they appear to be with us to stay and in many orchards we find more culls than choice fruit

In some localities, favorably situated as to freight rates, a good many cider apples are shipped to the largest cider mills, but in many places cider apples, or a good many of them at least, simply go to waste for want of a market.

In the East, and especially in Pennsylvania, a great deal of cider jelly is made. Parties running cider mills often run evaporators in connection and make up for customers on shares or by the pound.

These evaporators are not expensive, prices ranging from $75.00 upwards according to capacity. The fresh made cider is boiled rapidly by steam in these evaporators and goes into a jelly and if care is used in selecting the apples and boiling it, makes a very good jelly, and with cheap cider apples, it can be placed on the market at a very moderate price and it should have a good sale.

Any one embarking in this business will find plenty of cheap adulterated jellies to compete with, but any one with plenty of push should be able to make financial success in making cider jelly. Sweet cider made late in the season, of good apples, makes a good wholesome drink and there is always a demand for pure sweet cider. To keep it sweet and place it on the market has always been a puzzle.

Theoretically, cider heated thoroughly to 160 degrees and then sealed up and kept from the air, is supposed to keep without fermenting, almost indefinitely; for domestic use, fruit jars answer nicely to store it in and are as cheap as bottles. This is also a good way to keep grape juice, but it is almost necessary to add some sugar to make it palatable, the amount depending upon the variety of grapes.

In heating, both cider and grape juice, the work must be done thoroughly and should be kept hot at least twenty minutes.

On a large scale, it might be possible for some enterprising party to make a financial success by placing these articles on the market. A person embarking in this business can also look forward to something higher than mere pecuniary reward, for all drinks of this kind, thoroughly introduced, must displace a certain amount of harmful acoholic beverages and a person would find himself doing practical temperance work and, at the same time, reaping a pecuniary reward, a combination not always easy to accomplish in every business enterprise.

Cider vinegar making offers an easy and profitable way of using up unsalable surplus apples. This requires very little investment and may be worked on a large or small scale, and it also has many agreeable features not found in many kinds of business. After the cider is once put away in barrels, the possessor of a few barrels or a few hundred barrels can go about his business, his crop is planted and his business is going on, his cider works day and night and seven days in the week, and success is reasonably sure if a few simple rules are observed.

Cider made from early fruit usually lacks saccharine matter, and will consequently make very weak vinegar, while later apples, especially winter apples, have a good supply of it, the amount of saccharine matter is very easily determined with an instrument for this purpose costing only a nominal sum.

Put the cider away in barrels in a horizontal position, leaving the bung-hole open; if in a building where it can be kept warm during the winter, so much the better; keep in a warm place in the summer but not in the sun, as that overheats it and we do not get as good results. The ideal way to make vinegar is to have a storage building made warm, then keep a little fire during the winter, this hastens fermentation and we get the desired result in shorter time.

Do not meddle with it until it is ready for market and thoroughly made, then carefully rack it off or, better, ciphon the vinegar off from the sediment.

Plenty of patience is required to make a successful vinegar maker, as cider vinegar made in this way rarely attains full strength short of from one and a half to two years.

Will the business end of cider vinegar making pay? This is largely a question of management, the same as in every other business, a great deal of vinegar is used, and energy and push put into the business should make a financial success of it.

DISCUSSION.

SECRETARY DUNLAP—It seems to me, Mr. Chairman, this subject ought to be considered as one of great importance to all persons having either a bearing orchard or one that is expected to bear in the future. The inferior products of an orchard, if allowed to go to waste, are a serious loss to the orchardist. It is important to save and harvest all the crop and place it upon the market to the best advantage.

The paper just read, it seems to me, is a very practical paper. It does not go as far into details, perhaps, as a beginner would like, because it does not show him exactly how to go to work in all these thing and make a success of them; and sometimes necessity is a very important factor because it teaches us some things we never otherwise would find out.

I have every fall put three to five hundred barrels of cider in my cellar and then in the spring taken them out of the cellar at a great expense of nominal labor; whereas, if I had left them in a shed outside where they were merely protected from the weather, but permitted to freeze during the winter, I would have had vinegar in one half the time that I had it after doing all that work. So a good many times the necessities of the case are quite an important instructor. You have to go through a great many of these things Mr. Johnson has discussed before you can become well acquainted with the minutia and the details successfully. But, as he says, if you will put energy and push into it you can make most all of these inferior products of the orchard fairly profitable.

MR. CALLAWAY—I wish some one would tell us what to do with our blackberries when there is a glut in the market and our berries are ripening and going to waste.

Mr. MILLER—I would like to corroborate Senator Dunlap on the vinegar business. I don't believe in a warm room at all to make vinegar in. I put the barrels in a cold room properly darkened so the worms will not eat the barrels and let the vinegar freeze. Fill the barrels not quite full so when it freezes there will be no waste, and I can get good vinegar inside of twelve months. Twenty years ago I tried the experiment of leaving the vinegar out under a shed, but the worms destroyed my barrels. The room should be properly darkened to prevent that.

In regard to blackberries. We utilize our surplus berries first by scalding and canning the juice.

MR. CALLAWAY—Did you sell it?

MR. MILLER—I have not sold it yet.

MR. JOHNSON—In the East the farmers make a great deal

of apple butter and cider jelly. These make a very nice sauce, and something that can be sold.

MR. MORRELL—The opportunities to make money on a plan of this kind seem to be almost entirely gone. I can take you to several places in Chicago where they are using all sorts of waste products to make all these jellies with glucose mixtures, and they do it cheaper than any farmer or fruit grower can possibly do it. They have the control of the market so far as retailers are concerned. They will evaporate peelings or skins and make jelly from them, and then by the use of timothy seed and flavoring make respberry jam. With clover seed they will make strawberry flavor. All those things are going on at such a rate you really have no chance to get hold, because the retailers will buy the cheapest. The only way you can beat it is by food adulteration laws. They can make anything of that character cheaper than the farmer can make it.

As to vinegar, that is manufactured now in Michigan by the thousand carloads at six and one-half to six and three-fourths cents a gallon. You usually get about four and one-half gallons of cider from a bushel of apples, making about thirty cents a bushel for your apples. There is not much made at that.

As to fruit juice, there may be something in that. But these same big fellows are working in that line. There is not very much call for apple juice any more, not enough trade in that to count.

MR. JOHNSON—Because some one else is making a cheaper product it is no reason why a man should not work up his material.

It is not necessary to sell cider vinegar at six and one-fourth cents a gallon. I can always get more for it.

MADE HONORARY MEMBERS.

MR. HARTWELL—Mr. Chairman: I move you that Mr. C. M. Hobbs, of Bridgeport, Indiana; Mr. R. Morrell, of Benton Harbor, Michigan; Mr. A. Nelson, of West Lebanon, Missouri, and Mr. A. F. Colman, of Corning, Iowa, be made honorary members of this Society. Carried unanimously.

REPORT OF DELEGATE TO INDIANA.

H. A. Aldrich, Ncoga.

Mr. President:

The thirty-seventh annual meeting of the Indiana State Horticultural Society was held in the State Capital building, Indianapolis, on Tuesday, Wednesday and Thursday, Dec. 7 to 9. There were about fifty members present. They had a very interesting and instructive program. The president of the association, C. M. Hobbs, of Bridgeport, delivered his annual address. It was followed by the first paper, "What Were the Causes of Failure of Our Apple Crop the Past Season?" by Joe. A. Burton, of Orleans. He ascribed it mostly to the fact that there had been a super-abundance of apples last year, and that nature scarcely ever produces large crops in successive years. He did not subscribe to the exhaustion theory, however, that the vitality is so exhausted one year that there is not enough in the tree next year to produce a crop. He noticed one thing—that trees on the poorer soil of the ridges, bore more apples than those on the rich alluvial soil of the bottoms. He left it to the chemist to say why. He exhibited specimens of the one-sided, small, rusty and excresence marked fruit of this year. Few of the apple growers present were willing to admit that dry weather had much to do with a bad apple crop. Some of them were certain that the excessive hot weather did; for the fruit on the north side of the trees was much finer than on the south side. Fungus diseases were made responsible by others for the poor crop.

J. G. Kingbury, of Indianapolis, reviewed the horticultural conditions of Mexico as he found them in a recent trip. He described the trees, fruits, plants and flowers found there as different from those of this latitude. He told of the primitive way in which agriculture is carried on in that country, and of the unparalleled richness and fertility of the Mexican soil.

The first evening's session was given over to the women. Mrs. Emma M. McRae, of Purdue University, spoke on the "Ministry of Nature." She spoke at considerable length, touching upon the influence which an association with nature has upon people in bringing out the finer qualities of their being. She is a fine off-hand speaker, and her many illustrations taken from real life were beautifully presented.

Mrs. W. W. Stevens, of Salem, located "Woman's Place in Horticulture." Generally speaking, she said it was any

place that she would fit. She noted that woman plucked the first apple. She advocated the organization of village improvement societies among the women, that they might see what may be done to beautify their homes and the communities in which they live, to help plant trees, cultivate flowers, make grassy lawns and keep things clean. There were many thing in this line that men would not "fuss with," and women must come to the rescue.

Wednesday morning before assembling for business the members, in a body, visited one of the cold storage plants of the city, and of all the barrels of apples opened for inspection of the society, only one was perfect, and that was a barrel of Genetons. The fault it was easy to see had been with the packer; one sample barrel had settled until it lacked full six inches of being full. If it was a fair sample of that shipment, some poor commission man would get fits.

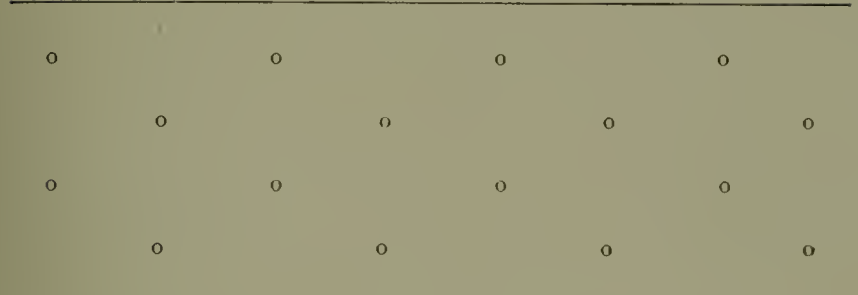
The subject that engaged the attention of the society all the morning was "The Profit of Small Fruits and the Difficulties Attending the Marketing of Them." It covered the strawberry, the raspberry and the blackberry. The cry was that old "Slogan" of the Illinois grower—overproduction. It was held with regard to the strawberry that the acreage was to great and there was advice that it be reduced one-half. One Kosciosko county grower was cited as having shipped two car loads to Buffalo and got returns of one cent a quart. It was contended by Mr. Hale, of Connecticut, that the market was never glutted by the best berries, and he recommendes the growers to raise only the best, and pick only the best, leaving the small ones on the viens. Many of the speakers urged honesty in packing, and advised that the small berries be placed on top instead of at the bottom. The growers said that it was always difficult to get fair and honest work in picking from the pickers hired, some of whom would pick anything in order to fill their boxes up quickly.

In the afternoon Mr. Hale, of Connecticut, spoke on "Commercial Peach Growing." He recommends trimming the young trees to be planted to mere canes not over two and a half to three feet long,all the roots except a few stubs two inches in length being cut away. After several experiments finds 13x13 feet the best distance to plant. Cites an example of an orchard he planted in 1884 of twenty-two acres. Eleven acres were planted 18x18 feet, 134 trees to the acre, and eleven acres 11½x11½ feet, 300 trees to the acre. It was the intention to plant the last half 12x12 feet, but when they had every tree planted they found their

measuring pole was only 11½ feet long. An exact account has been kept with each half, and the tenth year after planting the thick planted section was $7,000 in net profits ahead; the last two years the thin planting gained about $300, and he looks for the thin planted part to make slight gains from now on, but he never expects that it will catch up in the life of the trees. Straight rows at equal distance apart are essential to best and most economical culture, but cease all plowing or cultivation at least six weeks before the end of the growing season. In order to protect the young trees from the extreme changes in the temperature likes a few shovelsful of earth mounded up at its base at the approach of winter, which easily crumbles away during first cultivation in spring. By starting the cutaway harrow right after the frost comes out in the spring, before the surface gets dry and hard the orchard can be perfectly fitted for summer culture. Has one orchard that has never had a plow stuck in it for eight years and does not expect it ever will again. Does not recommend stable manure of any kind for a peach orchard. Fertilizers rich in potash and phosphoric acid and lacking nitrogen are best suited to the peach. Recommends heavy pruning in years when a majority of the fruit buds are alive, but not so heavy when they are scarce. In years when 90 per cent. of the buds are alive would take off three-fourths of the new year's growth, the closest cutting being in the central top. For borers recommend a wash of one quart soft soap, four pounds of lime, one pint crude carbolic acid diluted to two gallons with water, and made into a thick paste with common clay, but puts more faith in digging them out than any wash. Claims that over-bearing is the besetting sin of the peach tree, and that heavy pruning holds this in check, and that the cheapest and best time to pick and dispose of surplus fruit is when it is green. Does not pick his fruit until it reaches full maturity in size and color, judging entirely by the color of the under or most shaded side of each peach. Gathered at this stage claims that they should be in fair eating condition in twenty-four hours, in perfect condition in forty-eight hours, and yet, if rightly handled, most of them would keep nicely from three to five days. The fruit is picked in small baskets, hauled to the packing shed in low, broad-tired spring wagons constructed expressly for that purpose, where they are sorted into three grades—extra. No. 1 and No. 2. Extra must be perfect in size, shape and color, running about seventy-five to the bushel or two and three-quarter inches in diameter; No. 1 about 125 to the bushel or 2½ to 2¾ inches,

and the other grade I could not remember what he said about it. In packing his peaches he hires none but the most refined and best educated women he can employ, and pays them good wages. Claims that it is impossible for a man to pack basket after basket of peaches and have them all alike; that it makes no difference whether he is a church member, deacon or preacher, it is a moral impossibility for a man to pack peaches without putting the best on top. He described how he fought the curculio last season in his Georgia orchard. He made a lot of curculio catches (and explained how he made them, but he is such a fast talker I could not catch on); each trap only extended under half the tree, so that it took two traps to a tree at a time and then jarred the tree with a padded club. The club was padded with old worn out bicycle tires, which he had considerable trouble in getting, as the companies refused to sell to him at first for fear he wanted them to make new tires. At each end of the rows he had barrels of water with a little kerosene on top in which to empty their traps. In this way fifty men jarred 50,000 trees a day, or 1,000 to a man, giving him the only crop of peaches in the state that year free from worms.

Mr. Hale was followed by H. E. VanDeman, of Virginia, on orchard plans. He described four plans, the Hexagonal, the Alternate, the Wellhouse and the Parker Earl. He claimed that the Hexagonal was the best economizer of space. It is a system of equilateral triangles, and is sometimes called the triangular system. It puts all adjacent trees equally distant from each other. The rows are twenty-eight and one-half feet apart three ways and permit cultivating the trees accordingly; fifty-two trees to the acre. The Alternate plan is identically the same, only the rows are thirty-three feet apart and the trees are to be planted alternate, just as bricks are laid in a wall; forty-six trees to the acre. In the Wellhouse plan the trees are planted 32x16 feet apart in a rectangular style, wide spaces running north and south; ninety-eight trees to the acre. In the Parker Early plan the trees are planted sixteen feet east and west by twenty feet north and south, with every sixth row left out for an alley; 108 trees to the acre. The intention is to cut out every other north and south row, leaving them 32x20; sixty-three trees to the acre. One half of these can be taken out later if more space is needed, leaving them forty-two feet apart; thirty-one and one-half trees to the acre. They were all illustrated by plats, of which a copy accompanies this report.

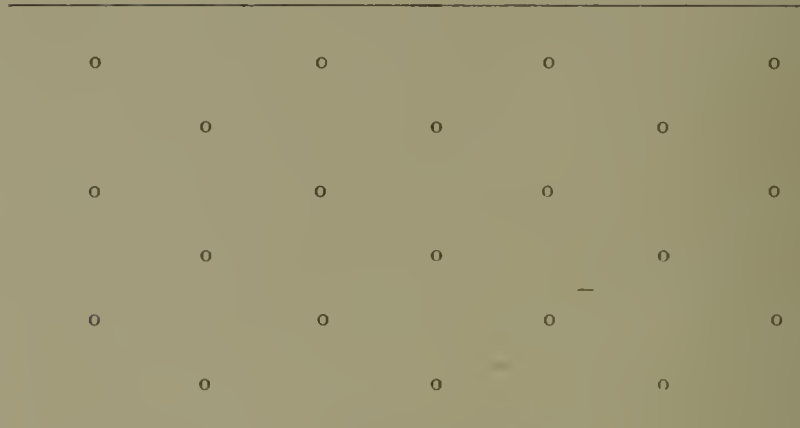


52 trees, 33 feet apart.

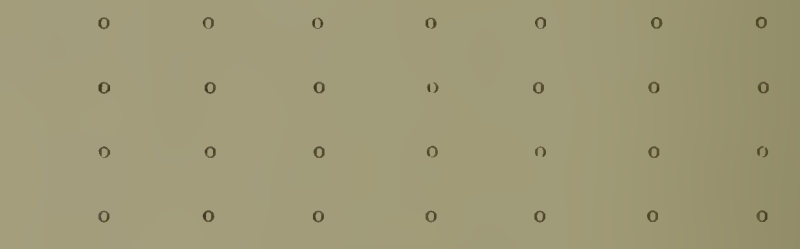
104 trees, 16x33½ apart.

156 trees, 16½x16½, leaving out two rows.

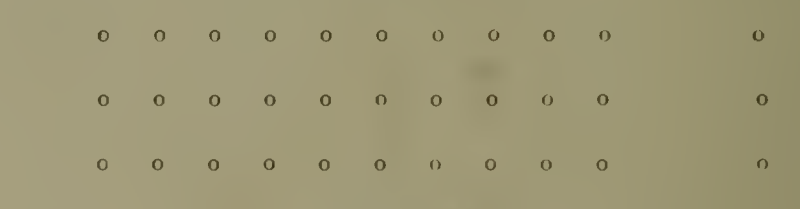
HEXAGONAL PLAN.



46 trees, 33 ft.x41¼.

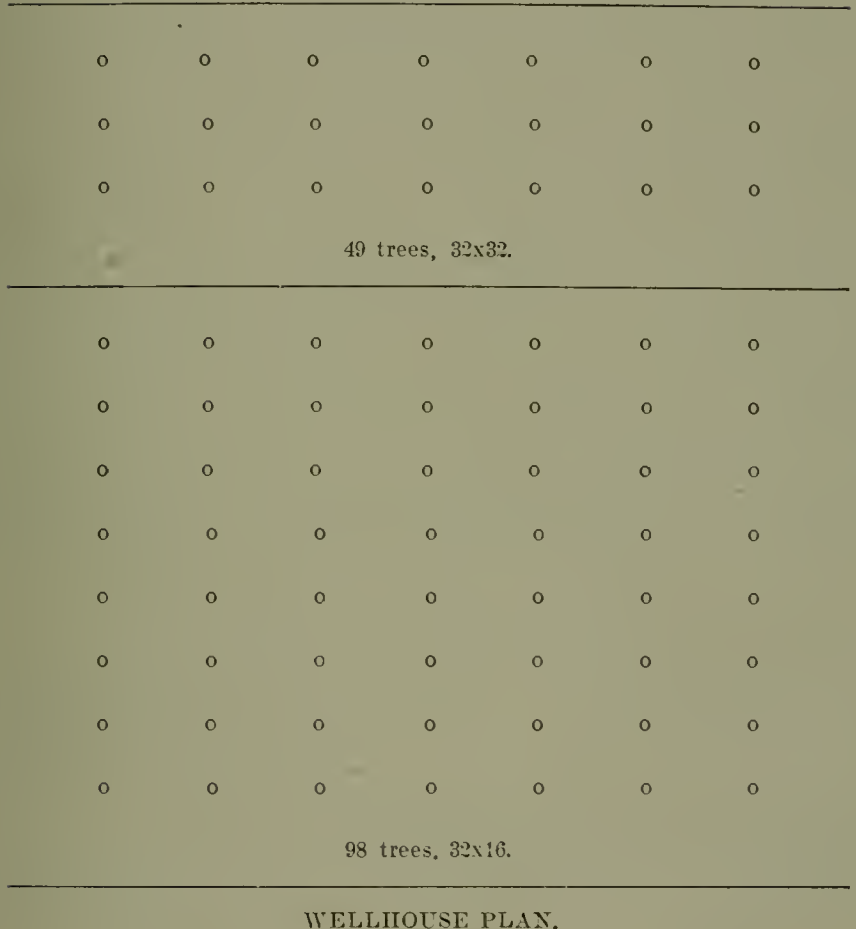


92 trees, 33x16½.

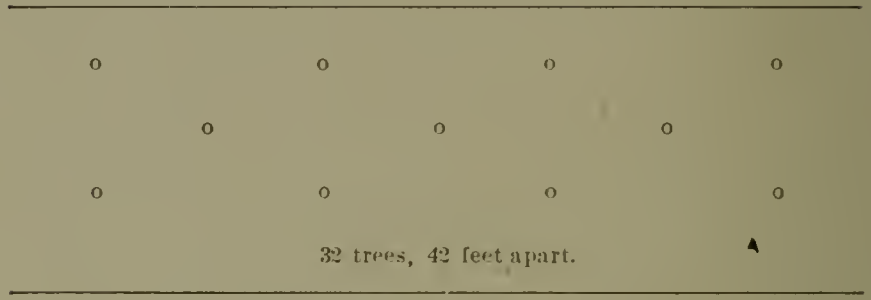


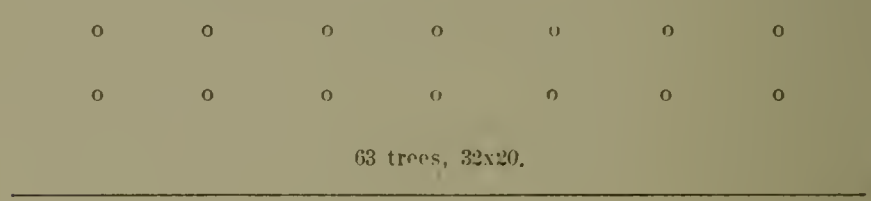
143 trees, 16½x16½.

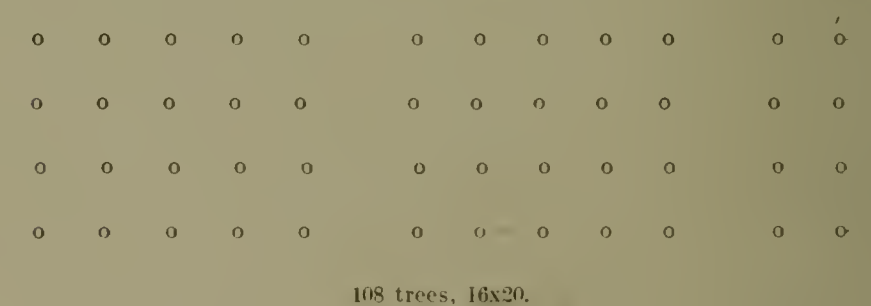
ALTERNATE PLAN.



WELLHOUSE PLAN.







PARKER EARL PLAN.

In the evening Prof. J. Troop, of Purdue, made a scientific report on the "San Jose Scale," which had been brought into the state on stock bought from eastern nurseries. As the discussion brought out reports of its destructive nature the fruit growers were considerably worried, as it seemed to threaten the destruction of the fruit industry of the whole state. But Mr. Hale exclaimed, "Glory to the San Jose scale! Glory to the curculio! Glory to anything that crowds the lazy man out of the fruit business," and says he does not fear the scale. A resolution was passed favoring proper state legislation for protection against the scale.

Prof. M. B. Waite, of the Agricultural Department at Washington, gave a stereoptican lecture on "Pear Blight and Other Diseases." It would be useless for your delegate to attempt to give a synopsis of this lecture, for it would be beyond his depth. Of the few points that fastened to his memory were—that pruning in winter favored the blight, the better the tree was fed and cultivated the more inclined to blight. The only satisfactory method of controlling it was by cutting out and burning, not allowing a single case of blight to winter in the orchard or within half a mile of it. He was inclined to think that the best time to cut it was in the fall, as it could then be seen the best; but it was important to cut it out whenever found, no matter whether it was winter, spring, summer, autumn or fall.

WEDNESDAY EVENING SESSION.

The Convention met pursuant to adjournment. President Goodrich in the chair.

THE PRESIDENT—Before proceeding with the regular program for the evening we will hear a paper from Mr. E. A. Riehl, who was a delegate to the meeting of the Ohio State Horticultural Society.

REPORT OF DELEGATE TO OHIO.

E. A. RIEHL, Alton.

Mr. President:

The meeting of the Ohio State Horticultural Society was held at the Ohio experiment station situated near Wooster, in the northeastern portion of the state. This part of the state is quite hilly with a thin looking gravelly or shale soil, which, however, seems to be better than it looks, judging by the crops grown.

There was a good program which was well carried out. Being held so far north many of the subjects discussed were of little value so far as our state is concerned.

From reports and analysis presented it seems that there is good reason to believe that the sugar beet industry can be made profitable in some sections of the state. Beets with a high per cent. of sugar having been grown. It was, however, stated that sugar beet growing and manufacturing the sugar were two separate and distinct occupations. The beets must be grown by the farmers in different quantities to give full employment to factories built for the purpose, that could not be put up for much less than $200,000. The cost being so great there is no possibility of the growers of the beets making the sugar themselves.

The matter of spraying was discussed by Prof. Green and others. There is no longer any doubt of the benefit of spraying, if properly done. Prof. Green stated that in their experiments in this matter they had found the cost of three thorough sprayings on large trees in full bearing was 20c per tree. The trees not sprayed averaged six and one-half bushels of inferior fruit. Those sprayed averaged ten and one-half bushels, nearly all of which were marketable. One reason why so large a per cent. of the fruit was sound, was because the sprayed trees bore more than they could properly mature, and were thinned, care being taken to remove the imperfect specimens. There was on exhibition an average sample of the crops of one tree each of sprayed and unsprayed fruit, which was shown in bushel boxes. This was a very striking object lesson. Few of the unsprayed apples were fit for anything but cider, while the others were nearly all marketable and nearly free from codling and scab. Prof. Green stated that while the cost of spraying was only 20c per tree the fruit of the sprayed trees was worth $4 33 per tree more than the unsprayed.

York Imperial, Johnson and Morris Red were highly spoken of.

Cherries seem to be considerably grown and came in for a good deal of discussion. Mostly the sour varieties like Dyehouse, Early Richmond, English Morello and Montmorency are grown. Among the sweets the Ida and Windsor were highly spoken of.

The San Jose scale was quite thoroughly discussed. They have it in spots widely distributed all over the state. It was, however, as yet only found in orchards that had received stock from New Jersey; most of the infected spots

having received it on stock bought of the Lobett nurseries. The nurseries of Ohio were said to be entirely free from it. The statement was made by the entomologist, Prof. Webster, that they had not been able to exterminate the scale from any infested orchard by any kind of treatment short of digging up and burning root and branch of all infected trees. Applications of kerosine, whale oil soup, etc., would keep it in check, but could not be depended on to entirely eradicate it. Undiluted kerosine was said to be a safe remedy to apply in cold weather on apple and pear trees, but was not safe to use in warm weather on any other kind of trees.

The Ohio experiment station is not in any way connected with the university, being under a separate and independent management. It seems to be exceedingly well managed, and profitable experiments are being carried on, on a large scale that must prove of great value to the farmers and horticulturalists of the state. The offices are in a large stone fireproof building situated on the crest of a high hill, overlooking the town of Wooster and quite a large extent of country.

The barn is 210 feet long, some 40 feet wide, with posts 20 feet in height. One hundred thousand feet of oak lumber being required for the frame work. In this are the eighty-seven head of cattle that are used in feeding experiments in groups of from three to ten, in different ways and with different foods, to determine the value of various foods, manner of feeding, and the feeding and milking capacities of the different breeds. Hogs, sheep, and other farm animals are being experimented with in the same thorough manner.

The station grew, this past season, 273 varieties wheat and 119 varieties oats.

The Horticultural part of the station is presided over by Prof. Green, and is in excellent condition, a full line of all fruits being planted for testing, the list comprising all the newer varieties as they came out, and many before they are disseminated. Much work is done in an experimental way growing vegetables like radishes, lettuce and tomatoes under glass, in so doing experiments are made in sub-irrigation, which has given much better results than surface irrigation.

The growing of cucumbers for pickling onions and tomatoes is said to be a large business in this vicinity. Two hundred thousand bushels of onions were said to have been grown in this county the past season.

The meetings of the society were well attended, the hall being taxed to its fullest capacity every afternoon and evening. The Ohio society contains a large number of men of

large experience in horticultural matters, who can talk interestingly and profitably on almost any horticultural topic, which makes the meetings move along rapidly and smoothly. The society is much hampered in its work for want of funds, receiving only $1,000 from the state. An effort is to be made to have the amount doubled, which will be none too much for the work to be done.

WOMAN'S LIFE ON THE FARM.

Mrs. A. Bryant, Princeton.

Mr. President:

When asked by your Secretary to write a paper for one of the meetings of this august body I almost felt I dare not refuse, though I confess I was scared almost to death, and, like Goody Blake and Harry Gill, my teeth they chatter, chatter still.

Woman's life on the farm—the subject, woman's life in the nursery would have been more appropriate for me. 'Tis in the nursery, both in the house and out, I have had the most experience. Many people that have never raised any children have a very fine theory about the way it should be done; perhaps my theory of woman's life on the farm, although I have never been a farmer's daughter or a farmer's wife, may have some good points, whether they can be utilized or not. I have known a farmer's family for many years; the father a man of some means, the mother a woman of culture, but a temper that rose to white heat on small provocation. She was a poor manager; her work was never done. There was four bright boys and one girl. The boys had to work, as most farmers' boys do. They often came from work hungry and tired, but mother gone and no meal ready. They would look about, trying to find something to satisfy the inner man, and, as a resort, would hitch up and drive to town, and there spend many evenings they would have spent at home had it been made pleasant and inviting. Those boys were naturally keen and alert, but, alas! too late, the mother sees her mistake. The education of our children begins with a mother's look, with a father's nod of approval or his sign of reproof. To every parent is committed a charge which can be shifted to no one else. The children of one family cannot be brought up successfully by the same method. There must be kisses for one, dicipline for another. Every parent is a future historian. Teachers and playmates may be forgotten, but the

first lesson learned from the life of a parent is immortal in its power. Fill up the "little pitchers" then with the milk and honey that will nourish unto a perfect growth; make them vessels of honor in the farmer's home and in the world. The husband and father have much to do with making life on the farm pleasant. A good father owes it to his wife and children to keep pace with them in their amusements, not to allow himself to get rusty or to have an entirely different set of ideas and occupations. He should allow them a little spending money to do as they please with, and not require them to ask the head of the house every time they want to buy a spool of thread or a few yards of calico. They like to feel somewhat independent. A monthly allowance to each, no matter how small, will make better financiers of all.

A father should never under any circumstances permit his children to treat him with disrespect. Nor should he desert his post as captain of the ship. He should aim at making his children feel that home is the happiest place in the world, as he and their mother should aim at making it the best. Life on the farm, where work piles up mountain high and the wife taxed far beyond her strength, should be lightened by hiring help. Do not think because mother never complains that no help is needed, lest too late you may find her hands are folded forever. Have on the farm a plot where flowers may grow. There are few women that do not love flowers, and if a small portion of each day could be spent outdoors with these pets health and cheerfulness would be the result. Next to the love of her husband, nothing so crowns a mother's life with honor as the devotion of a son. Any boy may fall in love with a fresh-faced girl, and may neglect the poor, weary wife in after years, but the big boy who is a lover of his mother is a true knight; who will love his wife in sere leaf, as he did in the daisied spring.

A farmer's home should be on the hilltops of cheerfulness and serenity; so high that no shadows rest upon it, and where the morning comes early and the evening tarries late, that the day may have many golden hours. Its kitchen should be an ideal one. They should be happy, comfortable places, where the farmer's wife moves with ease among the pots and pans; where the golden jars of preserves are opened and inspected, and moulds of jelly turned out, ready for use. The presiding genius of such a place cannot be otherwise than neat and dainty, for she understands the science of cooking and the principles of chemistry. Each pan has its place, each utensil its nail or closet. There are comfortable chairs to sit

on. The kitchen is the heart of the home, and if there is disorder there it is felt through the entire system. It is the farmer's wife that makes the farmer's home, not always an easy or comfortable task to do, but most satisfactory when accomplished.

We are not all born with sunshine in our hearts, but we can cultivate a cheerful sense of humor if we only try. The trick of always seeing the bright side, or if the matter has no bright side, of polishing up the dark one, is a very important faculty; one of the things no farmers wife should be without. The influence of the wife and mother in the domestic world is unquestioned, her sway is absolute; she can make all that comes within her reach happy and contented, or she can make them miserable; she can rule with—an iron rod, or lead with—a silken string.

Every farmer's daughter should be taught to make good bread, and put that knowledge into successful practice. She should know how to cook a roast or broil a steak; tell which is the best cut of beef for roasting or broiling; know how to prepare it for the oven, and how to attend to it after it is put therein. Should know how to prepare stocks for soup and mash potatoes so they will melt in the mouth, and, in short, get up a palatable meal, combining substantial and fancy dishes in good style. Outside of instruction in the kitchen, these daughters of ours should be taught many things in connection with household management, and if we as mothers do our duty by them they will brighten and adorn any home fortunate enough to secure them as mistress.

"Always doing, never done
Be it mischief, work or fun;
She can spin and knit and sew,
With those fingers fair and slender;
She can mould the whitest loaves
And bake them brown and tender."

DISCUSSION.

MR. J. W. STANTON—After hearing that paper I sort o' feel hungry.

MR. H. AUGUSTINE—When an artist has drawn a beautiful picture the daub should keep his hands off.

MR. PEARSON—That is so. But if I were going to add anything to that paper I would say that a woman's life on a farm depends a little on a good man for success and happiness.

BETTER FOOD AND BETTER METHODS IN OUR HOMES.

Mrs. H. M. Dunlap, Savoy.

Foods—How vast and important is this subject to every human being, for by them we subsist and have our being; we have our physical, spiritual and mental happiness; in fact they form the basis of all our political, social and household relations, and the saying, "Show me what a man eats and I will tell what he is," has much of truth in it, and as we find the individual man, so will we find the nation of which he is a component part. We are at the close of the nineteenth century, an age when man is awake to all interests of body and spirit as never before, and so we find many studying and investigating foods for man along with other scientific researches, and while the knowledge in this direction is not as great and perhaps not as accurate as we find it in other directions, due to the fact that its importance has not been realized, and also to the short time that study and thought has been given the subject. But we can from the knowledge already obtained, find much to learn and apply in our daily lives, that will make us healthier, happier and better men and women. Nowhere do I feel that this knowledge is so greatly needed as among our horticulturists, our farmers and their families. They are the producers of our foods, and yet how little the majority of them know the true value to man of the food they produce.

Our horticultural societies and farmers' institutes have become an established fact in our state. As such you meet to discuss all subjects that will increase your knowledge of how to raise the food products of your land and how to lighten the labor and expense of producing it. Did you ever think of how equally, if not more important, it is for those that fit the raw product for our use after being raised, should also meet and learn something of the knowedge they so much need, by coming in personal contract with their co-workers, exchange views, ideas and knowledge of its use and preparations. It is a sad fact that women are so indifferent to their duties and privileges in this direction and we find the majority of them willing to study and improve themselves in every other direction but that of the home-maker and food preparer of our homes. In an assemblage of representative woman from all over our broad state, that I recently attended, I heard very little about the necessity of making better homes by a study of foods, sanitation and the knowledge so necessary to the wife and mother of every home; but I did

hear a great deal about the necessity of a greater culture by the study of music, art and literature. Would not the highest culture come to us as men and women, if we started from the foundation of all that makes life and studied foods and the laws of our physical being, and so bring into existence healthy minds and bodies, from which could then be developed the highest form of culture? Hasten the day when the women of our state will organize for the purpose of bringing real and practical knowledge into their homes, that will make them worthy of the name of wife and mother. As I look back to the beginning of my married life, and view my ignorance of some of the most simple laws of my being; my ingorance of how to feed and care for my loved ones; of how to bring into my daily life a love for the profession I had chosen, I feel I must beg forgiveness of those I have wronged, and now know we must suffer even for our own ignorance, and that laws of the physical or spiritual, when violated, bring their suffering both mentally and physically. To day, we see young men and women founding homes all over our land, but many of them are not homes because the laws of health and knowledge of foods necessary to make them such are not known to them. I feel we are greatly responsible for the condition of things and I know there are better things in store for all human kind, if women will only arouse to their share of the responsibility and realize that what the boy and girl develops into, as they pass from their home life, they are largely responsible for; then and not till then will there be greater joy and peace. Women and men must realize that a child has a right to demand to be well born and after birth that their parents know how to feed and clothe them, to bring forth their highest spiritual and physical powers. Can this be so when we sit contentedly in our ignorance of all laws pertaining to these things?

I fear you may think I speak too strongly upon this matter, but I feel it from the bottom of my heart. God never intended that this should be an unhappy dwelling place, but we by our ignorance ofttimes make it so. When we understand more of the laws of our physical and spiritual being, then will this earth become a heavenly dwelling place--for heaven is a condition and comes from within, hence the necessity of studying all laws that will bring mind and body into a happy state of existence.

There is a right and wrong way of doing all the work of our homes, and so let us as far as possible study and know the right in the mos simple of our duties. In my study of

the food question in the last few years, I find that in the past I have been doing things in my preparation of food that made it an injury instead of a benefit. I did not use the best methods and appliances in performing my work, in fact, by a little study I have proven my ignorance of matters of the most vital importance to me as a home-maker.

As human beings, we know we are a part of nature; the plant, the animal as you well know must be fed in a scientific manner, if you are to have healthy plants and animals. The elements must be found in the soil that is necessary to individual plants, some requiring more of one kind than others. and different treatment entirely. The animals on our farms require feeding for the purposes needed, and what is well for one animal is not best for another; and hence the conclusion is easily reached that man must need scientific feeding, as well as plant and animal life. It is said that man's body is composed of fourteen principal elements and these elements must be found in the food we eat. They were first found in the soil and air and from that converted into plant or animal life, which we use as food. Can you not see that if the food with which we supply our bodies does not contain these elements in the right proportion to feed them and maintain the waste of muscle, brain, nerve and heat force, that some part of our physical body must become diseased, and as in the case of the plant when not properly fed and cared for, you have an unhealthy plant, so you have an unhealthy human being?

The fourteen elements necessary to sustain life for convenience may be classified into the general terms—carbonates, nitrates and phosphates. "The carbonaceous foods are those which give heat and force, and are composed of the starches, sugars and facts, such as white bread, potatoes, rice, sago, macaroni, pork, sweets, all kinds of fats, oils, cream, butter and nuts. The nitrates or muscle-forming foods are such as beef, mutton, poultry, eggs, milk, cheese, old or ripe peas, beans and lentils. The phosphates or brain food are lean meat, fish, cheese, whole wheat, Almond nuts, oatmeal, beans, peas, figs and prunes. I wish it were possible to get all to learn these classifications of foods, and it would not be long before we could have a much better and well balanced food ration upon our tables.

As we look into the majority of our homes we find little, if any, thought or study devoted to the combination or kinds of food placed upon our tables. We place the food there that will please our palates or many times such as can

be obtained and put there with the least thought and effort on our part. This should not be the case, and as one writer of note so aptly says: "Cooking has become an art worthy the attention of intelligent and learned women. The laws of chemical action are founded upon the laws of definite proportions and whatever is added more than enough is in the way. The head of every household should study the condition of her family. Let her see to it that no burst of ill-temper, no sullen disposition, no intemperance of any kind be caused by her ignorance or her disregard of the chemical laws governing the reactions of the food she furnishes." We must study the classifications of food and learn to give them in the proper proportion that our bodies may be well fed and not overfed in some part and starved in others. The laboring man needs a different food ration from the professional man who does mostly brain work, and the child different from the adult. Now we feed all alike and expect them to reman in good health, and if they don't we say it is a dispensation of providence and never think that providence is only to blame in the matter to the extent that all His laws must be obeyed or the punishment is sure to follow. We are ignorant of the physical and spiritual laws that control us as human beings and the majority deem it unnecessary to cast aside their ignorance in this direction, thinking that if they did they could not so easily gratify their palates or attribute their ill health to other causes than their ignorance.

"It has been estimated that a growing person needs about one part of nitrogenous foods to four of starch and fat; a grown person one part nitrogenous to five or six of starch and fat." Now with your classifications of foods well committed do you not see we might soon have a better food ration upon our tables and so not find many suffering from over supply of carbonaceous and others from too great amount of nitrogenous foods. Either extreme brings to us diseases that can and are controlled by a proper system of diet. Farmers are more apt to err than horticulturists in the direction of having too much of the carbonaceous on the tables, because you as horticulturists have more fruit and vegetables for your family. Many farm homes give entirely too much of white bread, pork and potatoes, all highly carbonaceous food.

Let us see how you can remedy this a little. Instead of the white bread substitute the whole wheat bread; then you will have brain, muscle and heat producing food combined in that alone. The wheat grain is one of the almost perfect

foods given to man. It contains the fourteen elements necessary to life when we have it in its entirety. Whole wheat bread is made from the entire wheat grain without the hull and is different from graham in that respect, for that contains the hull. I urge upon you to commence its use in your homes and you will never go back to the white bread, which contains but little else than starch or carbon. Do not make so great a use of potatoes, substituting other vegetables, grains, etc., as once a day is often enough for their use. When you have rice or beans leave out the potatoes. Do not fry your potatoes unless you want to do double work in digesting them, for the fat in frying seers over the starch globules and makes it difficult for the gastric juices to act upon them. Use the creamed potatoes either for warmed over or freshly cooked and you will find them equally palatable and much easier digested.

One writer of world-wide reputation as a worker and writer on the subject of foods, gives us some information of the potato that perhaps it would be wise for us to heed, for I know in the past I have shown my ignorance by its use in the way mentioned. "The albuminous substance in the potato is largely solanin, which is a poison and being mainly in or near the skin, is dissipated in the cooking. This poison is more largely in the old potato than in those just full grown. Water in which potatoes are boiled should not be used. Many unthinking or ignorant persons use it for bread-making. It should not even be given to the hogs; they might die, and what a loss 'twould be." Use pork sparingly, selling it and buying more mutton and beef, and make even a greater use of eggs than the majority do at present.

Here, I would like to speak of how universal it is among farmers to fry their steak instead of broiling it. Many have said to me: "I can't broil steak over soft coal, and I know it is a difficult matter; but let me tell you that cobs make an excellent fire for broiling. Fill your stove to the top with cobs, and when done blazing put your meat over it, and if you should be obliged to add more cobs it will not hurt, as the flavor of the cobs will not injure your meat. The subject of meats alone would be enough for a paper, as there is much to learn of the proper way of cooking to bring out or retain the nutrient power as desired and the different ways of preparing it for use. Eggs and milk, how much they should be used on our tables. It is said one pound of the mixed yolks and whites of eggs can produce rather more than two ounces of the dry nitrogenous substance of muscle and

flesh. Hence how necessary for daily use. By our mode of cooking we can destroy much of the value to us. Never fry an egg any more than you would a potato, unless you want to use up energy in digesting it that should be put to other purposes. The albumen of an egg should never be cooked in a higher temperatare than 170 or 180 degrees, as beyond that it toughens it and makes it well nigh insolnble by the gastric juices. In frying them the fat must reach 300 degrees or more, hence indigestible they must be. In boiling or poaching eggs they should be put in boiling water and then set back where the temperature will remain at 180 degrees, and let stand for longer or shorter time as to the hardness desired. There are many nice ways of cooking eggs that we can have variety enough without frying them. Many busy housewives cook by the quickest methods, as their time is limited, and frying is one of the easiest way of preparing them.

Vegetables and fruits are very necessary to us as food. Many times they do not contain elements specially needed as food, but form dilutants for our other food. Farmers, as a rule, do not consider the importance of a fruit and vegetable garden as they should, consequently their families do not live as well as their city neighbors, when they should live better. Cabbage, turnips and onions, if rightfully cooked, can be made wholesome and palatable. Tomatoes should be used with care. They contain calomel, and should not be used with vinegar. Many people say they cannot eat tomatoes, as they produce canker sores in the mouth, and may not the use of vinegar with them be the cause? Lettuce, celery and radishes are dilutants, and are principally water. They are essential for foods as dilutants are as necessary as solid food. One little rule I would like to give before leaving vegetables: In cooking them, all grown above ground should be cooked in boiling salted water, those below ground in unsalted boiling water.

Fruit should be found upon our tables frequently, and in its natural state, and not between pie crusts. It is said that all of our scientists who have reached a good old age have been fruit eaters, many of them making their noon meal entirely of fruit. I understand there is a society of business men in New York City who have banded themselves together for the purpose of simplifying their noonday meal. They make it principally of fruit, and find they are better equal to their work in the afternoon than when they eat a heavier meal.

I feel that I must say a word on the cooking of oatmeal and rice, as they are such valuable foods for us. Oatmeal, to

possess the greatest value as food, should be well cooked. I use steel cut oatmeal, and cook enough on ironing days to last a week. I do not have it oftener than three times a week; and sometimes only twice, changing with other cereals. To a quart of boiling water, salted, take four tablespoons of steel cut oatmeal, put in double boiler and let it cook slowly on back part of range all day. Do not stir. In the morning, when you wish to use, put on the stove and reheat. If you use the rolled oats, they must be cooked an hour, and even longer is better. Rice is quickly and easily cooked by taking three and one-half quarts of water to one cup of rice. Have water boiling, and add rice slowly, so water will not cease boiling. Boil it constantly for twenty minutes, then pour into colander and drain; then place in oven with door open, and let remain five minutes to dry. Place in dish and serve. I wish the farmers' wives, instead of making indigestible pies and cakes, would spend that time in making soups and salads; spending time and money in that way instead of for those articles of food that have an injurious effect, and no real value to us as food.

When our foods are placed before us, it is as necessary to be temperate there as any place; for when we overeat we are destroying our powers of mind and body as the intemperate man is with his liquor and tobacco. I wish I might have time to say more about our foods, but must pass on to another part of my subject, almost as important. Enough, I hope, has been said to induce you to think along this line, for there is not an article of food used but what we can learn something about its growth, use and preparation that will be to our benefit.

Lincoln did a glorious work in emancipating the slaves, but there yet remains other forms of slavery to be abolished, and the work of emancipation may not be done by one individual. I refer now to the bondage existing in our kitchens, where many housewives are burdened with bad methods, ungainly utensils and inconvenient surroundings. This subject is a delight to me, as I have only recently come up out of this bondage, and have not had to go to a far-off promised land or a new kitchen to enjoy my freedom, but have thrown off the shackles that bound me by readjusting my old environment and bringing into it modern methods and weapons. I am now monarch of that small realm and no longer a slave to burdensome work. Whereas, I used to travel miles a day to accomplish the cooking and its attendant dishwashing and other necessary adjuncts, I now have so

overcome "matter with mind" that I have reduced the daily journey to yards and furlongs. Let me give you a mind picture of my kitchen, as it was and as it is, and perhaps it will give you "an idea," as it did a friend of mine, how you may institute an easier order of things in your kitchen. This friend to whom I refer had for years carried her table dishes (or had her domestics carry them) through her china closet to her kitchen to be washed, and then carried them back to the china closet, thinking that there was not room in the closet for a table. But she now rejoices in a broad shelf of the right height, where her dishes can be washed and as soon as washed placed on the shelves of the closet.

But let me tell you of my picture—the old and the new. My kitchen is 17x18 feet, and I have always complained of it being too large, but by the purchase of a cabinet table, a safe, and covered another table with oil cloth, my kitchen has come to be one of great convenience. Previously I had but one table at the north side of my kitchen. There is a shove through at the southeast end of my kitchen from the dining room to the kitchen and I used to carry my dishes from that to the north side of kitchen and back again. Now I have a table by the south side of my kitchen next to the shove through and in washing my table dishes I have scarcely a step to take. My cabinet table I have on castors with a zinc covering on the top. That is placed directly in front of the range in middle of room. In this table is kept flour, sugar, salt, spices, with all the little utensils used in cooking. To my right and at the south side of my kitchen I have placed the safe wherein I keep all large utensils used, dish towels, pieces of cheese cloth, etc. On the north side of my kitchen, where my table did stand, I keep a vapor gasoline stove and to the right of that is my sink and drain, with soft water pump in it. Can you not see how few the steps must be, compared to when I kept all these things in a pantry that was at least twenty feet from my only table at the north side of my kitchen, my pantry door being at the extreme southwest corner of kitchen. My cabinet table cost me $7, my safe $3, castors and oil cloth for other table, $1, making a total of $11; about the cost of one doctor's bill that often results from overwork. Now, as to the utensils I am using, there has been a great change in the past few years. My kettles are all of granite and are easily washed and are light to handle. I have a metal kneading board, that is also light to hand and much easier to keep clean than a wooden one. It can be used for cutting up meats, chickens, etc. Acids do not corrode it, and I find it useful

in many ways. I use wooden paddles or spoons with a round handle, that is easier to hold than the old-fashioned flat-handled spoon of tin. A teller's kitchen knife, a spatula, tin measuring cups, an apple corer and potato parer are a few of the little utensils that should be in the home of all housewives. A whipped cream churn, for as farmers we should indulge in that luxury occasionally. An ironing board called the "Peerless," and one so necessary to the busy mother with many clothes to iron for little folks. A triumph meat grinder, or one of similar make, should be in every home, for with it you can take the toughest and most inferior pieces of meat and put through it and then make into cakes and broil, or into Hamburg steak. Put your dry bread through it to make bread crums, your suet for puddings, in fact, you will find many ways of using it. A Mudge fruit canner or sterilizer I have recently added to my list and am highly gratified with results so far. With it you can put up all kinds of vegetables, and fruits canned by this process are kept more perfect in form and flavor. A chair step ladder is a great convenience and should be in every kitchen. I have spoken of the most important, but other things of great usefulness might be mentioned, as the small bread pans, easily adjusted scales, a small sauce pan with long handle for making sauce, etc.

When I look back to my old kitchen and utensils therein I feel that I have accomplished a little for the bettering of my home and the health therein, and feel anxious that other women, and especially our over-burdened farmers' wives, should endeavor to obtain help in these matters that go so far toward bringing peace, harmony and good health in the home life. You as women should expect and demand even, if necessary, appliances for doing your work, and nine times out of ten the good man of the house will accept the situation and take as much interest in the matter as yourself.

So deeply do I begin to feel in this matter of making better homes by better foods and methods, that I assure you it is the one place that our temperance workers must begin their work, for out of a healthy, happy home will go forth girls and boys equal to battling with the temptations of life, and our temperance workers can increase their usefulness by establishing cooking schools and studying the food problems that confronts the poorly paid laborer of our cities and towns. Our asylums for the insane would not be so crowded or our penal institutions such a disgrace to our

land if we were taught more of how to make home a happy, healthy dwelling place from our early years until we enter one of our own.

To you, farmers, horticulturists, and your wives, I appeal for a more earnest united effort on your part to build happy, healthy, convenient, attractive homes. What a wealth of meaning in the word "home:" typical of the mansions "not made with hands eternal in the heavens." Did you ever think, that if not capable of building a happy home here and now, that you would not be equal to the enjoyment of one in the spirit land, where we are all trending? Life and in the future is much as we make it, and so to each of you I pray may be granted the blessing of a happy home now and through all eternity, inasmuch as you are willing by your own effort to work, aid and acquire it.

DISCUSSION.

At the conclusion of the reading of the foregoing paper Mrs. Dunlap said:

I would like to speak of what has been done in Champaign county in regard to the matter.

At our county institute last winter a paper was read on food preparation, and at its close a lady arose and asked that a committee be appointed immediately to go to work and carry out some of the thoughts presented by that paper and to see what could be done. There was a committee appointed composed of seven ladies, part from the town and part from the country. They repaired to an ante-room for consultation, and decided that they would meet next day and take some action. As a result of their meeting next day the Champaign County Housekeepers' Association was formed. At the present time that association has a membership numbering eighty-six. They feel that they have accomplised a great deal of good. They have a chautauqua assembly at Urbana. Last year the manager of that association came to us and asked us to secure a cooking teacher for one week during the chautauqua meeting. We secured Mrs. Saunders, of Springfield, a graduate of Mrs. Rorer's school. She came and gave us a week of instruction.

Then we went to the County Agricultural Board and asked them how much they would contribute to assist us in bring-

ing Mrs. Rorer to the county fair. They told us, and as a result we had Mrs. Rorer with us a week, and as a result accomplished a wonderful amount of good, for the farmers' wives especially. Mrs. Rorer could reach them because they were there at the fair. The movement had already been set on foot in Urbana, and they had labored some to that end, but had not accomplished much, but by having such a course of cooking there it created such an interest that through the efforts of some of the people and the woman's club of Urbana they have put cooking and sewing in the public schools of Urbana, and I cannot begin to tell you how much good it is doing. There are eight hundred boys and girls in that school taking sewing alone, and about one hundred are taking cooking. We feel much of this is the result of our farmers going to work and doing something. This is only the beginning of what we want done. We want a department in our State University, where our girls can go and become qualified to perform the duties of wives and mothers. [Applause.]

I hope you will all help us next winter when we ask for an appropriation for a woman's building. I hope we will see your votes recorded on the right side. We want a big one, because we want to help our girls. Our boys can go there and take a short course in agriculture. Where can our girls go for a conrse in domestic science, that which is the most important of all—a thing they ought to know. Where is there a place or an opportunity to do that? We must have a place at our State University, and I hope you will all aid us in securing such a place. [Applause.]

Mr. Hobbs, of Indiana—If you will send your girls to Indiana we will take care of them!

Mr. Morrell—Or to Michigan!

Mrs. Dunlap—Illinois is able to take care of her own girls. [Applause.]

Mr. Hartwell—Mr. Chairman: If it had not been for my great respect for Mrs. Dunlap I would have got up and walked out when she commenced the reading of her paper. Because I have heard so many papers on this subject that I

thought it would necessarily be stale. But I want to say this about this exercise. It is worth any man's dollar to be present and listen to it. It is inexpressibly fine in every sense of the word, and of great value to the people of the state. I want to ask Mrs. Dunlap what she thinks of the proposition of the gentleman who said: We are getting our food in such a condition that it is so easily digested that our stomachs will become impotent from having nothing to do; that our stomachs will grow weak because they will have nothing to do?

Mrs Dunlap—What causes nearly all the people of the United States to have dyspepsia? They tell us there are one hundred different forms of dyspepsia. If that be true I think it is time for us to begin to study how to feed our stomachs, so we may not have any of these various forms of dyspepsia.

Mr. Callaway—What was the trouble with the water—was their too much lime in it?

Mrs. Dunlap—Yes, and they said there was some surface drainage in it that should not have been permitted.

Mr. Hartwell—Have you had several analyses, or might it have been a simple accident?

Mrs. Dunlap—No, I think there was no trouble of that kind.

Mr. Callaway—How about the canning?

Mrs. Dunlap—I wish I had brought my canner with me. I am not advertising any firm's articles. This is manufactured in Philadelphia. It is called the Mudge fruit canner.

Mr. Hartwell—Do you use glass vessels for the fruit?

Mrs. Dunlap—Yes.

Mr. Callaway—I have seen one of those sterilizing canners, in a family in Morgan County, Illinois. I have seen peaches canned by it that showed no change in form, condition or color, and also apples and other fruits. They look and taste just as they did at the time they are taken from the stalk, vine or tree.

Mr. Shank—There is another thing that should have been mentioned in the paper. That is the location of the kitchen. I would recommend that the kitchen be located near the cen-

ter of the house for convenience. A suitable refrigerator should also be supplied and save the farmer's wife many steps in running up and down cellar.

MRS. DUNLAP—I have an odorless refrigerator that is very nice. I can put anything in it with my milk and butter, and there is never any odor. It is a difficult matter to put onions near milk or butter, but I have tested it in my refrigerator and know it can be done without injury to either. If women would organize and confer together they would be better informed as to what to buy. We ought to study these things as well as men study with reference to the utensils and machinery they use, so that when we go to buy anything we will know what the best is.

MR. MORREL—This matter of cooking is one of the most practical things the women have ever talked about. In Brooklyn, N. Y., they have the Pratt Institute which is turning out teachers of domestic science. It is a matter that needs attention, and the fact that the ladies have taken up the subject is one of the brightest signs of the times. The Michigan agricultural college has put in a department of domestic science, and is teaching it to the girls. They are getting a very large class. Teach plain and ornamental sewing and music if they see fit, and everything that pertains to making home pleasant and making a woman a capable housekeeper and an entertainer, and we all know how desirable a combination that is in a wife.

In reference to the location of the kitchen, the center of house might not be a desirable location for many reasons, but the kitchen should be conveniently located so as to save steps.

MR. REASONY—I think the conditions of our country are beginning to change. We find there is a great deal more intellectual and esthetic culture in the homes on the farms than there has ever been before. I find some of the highest social qualities today in our farmers' homes. I have some opportunities for knowing. I think that paper contemplates, and I have thought that I could read in the lines that Mrs. Dunlap contemplated the highest social and esthetic culture

for our wives and daughters. But I find the best music, however finely executed upon an instrument is a very poor apology for a sour, sad, loaf of bread. Some heretic has said, and I guess he wasn't very far wrong, that the secret of total depravity was in the liver. [Applause.] And I think in that home where we have sour bread, and fried potatoes, and beefsteak fried in lard, and everything else cooked on that line, that there will not always be the greatest harmony. I like the idea also of having fruit in our homes. If you will pardon the bombast of your humble servant, I will say I think I have never eaten a pound of meat in a month in my life; and, although running the risk of being ostracised in some places where I have been, I have insisted on having fruit for breakfast; and I have been where that wasn't fashionable. I want fruit for breakfast, dinner and supper, and between meals; and I have not been so sick a day in my life but what I could go if I wanted to. We want more fruit!

Recognizing the fact also that a large proportion of the crime and the unhappiness in our homes come from physical disease and that our food has very much to do with it and contributes very largely in that direction, it renders the food question one of the most important we have to deal with today. I am very glad Mrs. Dunlap gave us that paper. I wish we could have it published in a form where it could be read in all our homes.

Secretary Dunlap—I want to say one word about the water supply of homes. Now it might appear to some from the remarks made by the junior member of our firm—I say "the junior member," because she is the *younger* member of the firm only—in regard to the water of the wells we had analyzed—you might suppose that well was in a place where slops were thrown, or something of that kind. But the contrary is the case. The embankment around the well is such that everything flows off readily. Nothing is ever thrown anywhere near it; but, nevertheless, the analysis showed that there was a great deal of organic matter in that well that was likely to create disease. It comes in this way sometimes. There is a seam or strata of sand near the surface that runs out from

a well to places possibly where there is organic matter that gets into that vein and is carried from there to the well. It might be ten rods away. So you cannot always tell from the location of a well whether there is good water in it or not. Clear water does not always mean good water, by any means. This particular well was dug into a drift of blue clay, some sand veins coming through the blue clay. It is what we call in our part of the country a dry well; that is, it is exhaustable. Just a short distance from that we have a deep well. The analysis of water in that well showed very different ingredients from the shallow well. I think that all those who want good drinking water should have it analyzed by sending it to the University of Illinois. If you will address a letter to the professor of chemistry of the University of Illinois you will be sent a bottle with proper directions for shipping and I think the University pays the express charges one way and makes the analyis free.

Mr. Barnard—How do you remedy this matter about the water?

Secretary Dunlap—If we use it at all we boil it. We use from the deep well.

Mr. Pearson—My plan is to use rain water and filter it. You can get a good filter that will last twenty years for ten or twelve dollars.

Samuel Edwards.

On motion of H. Augustine the Secretary was instructed to send a message of greeting and sympathy to Mr. Samuel Edwards, of Mendota, one of the organizers of the State Horticultural Society, who at the age of 78 lies upon a sick bed.

OBITUARY RESOLUTIONS.

Mr. Barnard, chairman of committee on obituary resolutions, reported as follows:

Whereas, An inscrutible Providence has since or last annual meeting removed from our midst four of our faithful workers and brothers in horticulture, viz.: J. T. McSpadden, Neoga; J. B. Spalding, Springfield; A. R. Whitney, Franklin Grove, and Robert Douglas, of Waukegan; therefore, be it

Resolved, That this society feels keenly its loss of these veteran horticulturists whose long lives have been earnestly devoted to promoting the interest of an enlightened horticulture in their respective sections of the state; and that this society offers its condolence and heartfelt sympathy to the bereaved families of the deceased, and directs its Secretary to forward each a copy of its reports containing this notice.

Remarks were made on the resolutions by F. D. Voris, who paid tribute to the sterling qualities of Mr. McSpadden; by L. R. Bryant of Mr. Whitney; by Jno. Periam of Mr. Douglas, and by Jas. T. Johnson, who eulogized the life work of Mr. Spalding.

The resolutions were adopted by a rising vote of the members present.

THURSDAY MORNING SESSION, 9:30 A. M.

The convention met pursuant to adjournment at 9:30 a. m., President Goodrich in the chair.

The session was opened with prayer by Dr. Reasoner, of Ogden, Ill.

FRUIT AWARDS—CENTRAL ILLINOIS.

Four varieties winter apples for market—First premium, S. D. LaRosch, Pekin; second premium, Jas. T. Johnson, Warsaw.

Four varieties for family use—First, S. D. LaRosch; second, J. T. Johnson.

Three varieties fall apples for market—First, Jas. T. Johnson.

Three varieties, fall, family use—First, James T. Johnson.

Single variety winter apple for market—First, Jas. T. Johnson; second, S. N. Black, Clayton.

Single variety, winter apple for family use—First, J. T. Johnson; second, S. N. Black.

Single variety fall apple for market—First, Jas. T. John-Johnson.

Single variety fall apples for family use—First, Jas. T. Johnson.

Ben Davis—First, J. T. Johnson; second, S. N. Black.

Willow—First, J. T. Johnson; second, S. D. LaRosch.

Rome Beauty—First, S. N. Black; second, H. M. Miller.

Jonathan—First, S. N. Black; second, H. M. Miller.

Grimes Golden—First, S. N. Black; second, J. T. Johnson.
Minkler—First, J. T. Johnson.
Winesap—First, S. N Black: second, J. T. Johnson.
Sweet Apples—First, S. T. Johnson.
Rawles Janet—First, S. N. Black; second, Wm. L. Walker, Odell.
White Pippin—First, no award; second, J. T. Johnson.
Stark—First, H. M. Miller; second, J. T. Johnson.
Variety other than above—First, Johnson; second, La-Rosch.

SOUTHERN ILLINOIS.

Collection winter apples for market—First, L. F. Dintleman; second, A. A. Hinkley.
Collection winter apples for family use—First, Wm. A. Young; second, E. A. Riehl.
Collection fall apples for market—First, C. H. Webster; second, F. Helm.
Collection fall apples for family use—First; C. H. Webster; second, L. F. Dintleman.
Single variety winter apple for market—First, F. L. Williams; second, Wm. A. Young.
Single variety winter apples for family use—First, Wm. A. Young; second, C. H. Webster.
Single variety of fall apples for market—First, A. A. Hinkley; second, L. F. Dintleman.
Single variety fall apples for family use—First, A. A. Hinkley; second, C. H. Webster.
Ben Davis—First, F. L. Williams; second, S. G. Mendenhall.
Rome Beauty—First, E. G. Mendenhall; second, F. L. Williams.
Jonathan—Eirst, A. A. Hinkley; second, F. Helms.
Willow—First, Mrs. J. T. McSpadden; second, C. H. Webster.
Newton Pippin—First, F. L. Dintleman; second, F. Helms.
Minkler—First, A. A. Hinkley; second, C. H. Webster.
Grimes Golden—First, Mrs. McSpadden; second, Wm. A. Young.
Winesap—First, C. H. Webster; second, F. Helms.
Rawles Janet—First A. A. Hinkley; second, F. L. Williams.
Reinish May—First, E. G. Mendenhall; second, E. A. Reihl.
Huntsman—First, F. Helms; second L. F. Dintleman.
Varity not named—First, W. A. Young; second, E. G. Mendenhall.

AWARDS ON VEGETABLES.

Early potatoes—First, L. F. Dintleman.

Late potatoes—First, Dwight Herrick; second, D. Herrick.

Onions—First, A. M. Archer; second, D. Herrick.

Onions from sets—First, A. M. Archer; second, L. F. Dintleman.

Sweet potatoes—First, A. M. Archer; second, J. N. Fitch.

Turnips—First, A. M. Archer; second, L. F. Dintleman.

Beets—First and second, A. M. Archer.

Turnips—First, A. M. Archer; second, Wm. Walker.

Parsnips—First, A. M. Archer, second, W. L. Walker.

Carrots—First and second, A. M. Archer.

Winter Squash—First and second, A. M. Archer.

Cabbage—Second, A. M. Archer.

Salsify—First, F. Dintleman; second, W. L. Walker.

Winter radish—First and second, A. M. Archer.

[These reports are deficient in that the collection of fruits were not given in report in full as too varieties. SECY.]

Reports were adopted.

NORTHERN ILLINOIS.

Best four varieties of winter apples for market—J. V. Cotta, first premium. Varieties—Ben Davis, Willow, Pewaukee, Jonathan.

L. R. Bryant, second premium. Varieties—Ben Davis, Willow, Jonathan, Salome.

Best four varieties of winter apples for family use—J. V. Cotta, first premium. Varieties—White Pippin, Grimes' Golden, Salome, Jonathan.

L. R. Bryant, second premium. Varieties—Wagener, Jonathan, Willow, Salome.

Three varieties fall apples for market—J. V. Cotta, first premium. Varieties—Clark's Orange, Snow, Perry Russett.

Three varieties fall apples for family use—J. V. Cotta, first premium. Varieties—Garfield, Zusoff, Perry Russett.

Single variety of winter apples for market—L. R. Bryant, first premium—Ben Davis. L. R. Bryant, second premium—Jonathan.

Single variety of winter apples for family use—J. V. Cotta, first premium—Jonathan. L. R. Bryant, second premium—Salome.

Single variety of fall apples for market—J. V. Cotta, first premium.

Single variety of fall apples for family use—J. V. Cotta, first premium.

Plate Ben Davis—L. R. Bryant, first premium; J. V. Cotta, second premium.

Plate Willow Twig—J. V. Cotta, first premium; L. R. Bryant, second premium.

Plate Jonathan—J. V. Cotta, first premium; L. R. Bryant, second premium.

Plate Grimes' Golden—J. V. Cotta, first premium; J. L. Hartwell, second premium.

Plate Minkler—L. R. Bryant, first premium.

Plate Snow—J. V. Cotta, first premium.

Variety not named in list—J. L. Hartwell, first premium; variety, Salome. L. R. Bryant, second premium; variety, Salome.

Report of committee adopted.

SECRETARY AND TREASURER'S REPORT.

Your committee on Secretary and Treasurer reports would report as follows:

We find them all correct.

Respectfully submitted,

DWIGHT HERRICK,
ED. H. RIEHL,
Committee.

CLASS I. AWARDS.

Collection apples not to exceed twenty-five varieties—First' Jas. T. Johnson, Warsaw; second, J. V. Cotta, Nursery.

Collection new apples not to exceed five varieties—First, Jas. T. Johnson; second, J. V. Cotta.

Plate new apples good enough to recommend—First, Daniel Shank, Clayton; variety, "Missing Link."

Plate seedlings good enough to recommend—First, A. A. Hinkley, DuBois; second, J. V. Cotta, Nursery.

Plate new pears good enough to recommend—First, C. H. Webster, Centralia.

Plate new grapes good enough to recommend—First, E. A. Riehl, Alton, "Perry."

Report of committee adopted.

PRESIDENT GOODRICH—The next thing in order will be the election of officers, and I desire to take this occasion to say,

that I do not want you to consider me as a candidate for any of the offices to be filled. I had rather retire for a time and give my time and attention to duties near at home. I have my own business which is increasing very rapidly, to attend to, and I have other duties that it would be hard to mention. I have relatives of such an age as to require more and more care at my hands; relatives who can not be with me very long, and whose claims upon my care and attention come first. I thank you most heartily for the honor you have already bestowed upon me in having elected me as your president for the past term, and I know you will make no mistake in your choice for officers today. I will appoint as tellers, Mr. Doan, Mr. Beal and Mr. Foster.

Prof. Burrill nominated Hon. Henry M. Dunlap, of Savoy, for president, seconded by Mr. Winn.

There being no other nomination, on motion of J. W. Stanton, President Goodrich was instructed to cast the ballot for H. M. Dunlap for president of the Illinois State Horticultural Society for the ensuing term.

President Goodrich—I have cast the ballot according to your instructions and I declare H. M. Dunlap elected as your president for the ensuing year.

Mr. Dunlap being called for said: I wish to thank the members of this society for the confidence they repose in me in electing me to the office of president of this society. It is an honorable position I think for any member of this society to hold, and I appreciate it myself heartily, coming as it does after you have put up with my services as secretary for several years. I thank you again gentlemen for the honor you have conferred upon me, and if I can do anything to advance the interests of this society and of horticulture in the state I think you can count upon my services for the next year. (Applause.)

Mr. Hartwell nominated H. A. Aldrich, of Neoga, Ill., for vice-president, seconded by Mr. Stanton.

There being no other nominations the secretary was instructed to cast the ballot for Mr. Aldrich for vice-president, which was done.

L. R. Bryant, of Princeton; J. W. Stanton, of Richview, and E. A. Riehl, of Alton, were nominated for the office of secretary.

The first ballot resulted:

Bryant twenty-five votes.

Riehl eleven votes.

Stanton fourteen votes.

Mr. Riehl withdrew his name as a candidate.

A second ballot resulted:

Bryant forty-four votes.

Stanton thirteen votes.

On motion of Mr. Stanton, Mr. Bryant's election was made unanimous.

For the office of treasurer, Mr. Stanton, of Richview, and O. W. Barnard, of Mantino, were nominated.

A ballot was taken resulting as follows:

Stanton forty votes.

Barnard eleven votes.

Mr. Barnard being absent, on motion of Mr. Hartwell the election of Mr. J. W. Stanton, of Richview, as treasurer was made unanimous.

On motion of Prof. Burrill the convention selected Springfield as its next place of meeting.

THE CHAIRMAN—The next thing in order will be a paper by Mr. R. Morrell, of Benton Harbor, Mich., on the subject of

SPRAYING FOR INSECT PESTS AND FUNGII.

Mr. Morrell did not read a paper but said:

Spraying is the fine art of horticulture. It is next to to propogation. Like a fine art it must be done. The sooner we understand the details of the work the sooner we study the system, the various compounds and the application, and all the minutae, and become familiar with it, the better prepared we are to carry on our operations. I will not spend much time in outline. I will try to talk of what to spray, why you should spray and when to spray. And I shall talk

some of implements, not to advertise any particular implement, but only because the implement is a very important factor in doing the work.

We spray for two reasons principally. One is to combat the injury wrought by insects. The other reason is to combat the injury wrought by fungii.

The principles underlying the two operations are entirely different. A man starting in the business should get first securely fastened in his mind that the spraying for fungus troubles is in almost every case preventative and not curative. That is the first thing to fix in our minds. It is an insurance, and that is all there is of it.

Spraying must become one of the regular operations having time and place of commencement. You must commence before you are alarmed. You must set it down as a regular operation.

I presume what interests the people of this country most is perhaps the black rot of the grape, and the apple scab. So far as fungus trouble is concerned, I have not heard very much said about the various mildew and blights of foliage outside of the apple scab.

Remember, I am not talking to you as a scientific man. I have no knowledge whatever of the business from a scientific standpoint, except that I have had to go to scientific men for my information and have applied what information I have gained from them. You may say it is a practical application of their methods. It takes years to thoroughly try an experiment. One year really determines but very little. This is one of the operations that must be repeated and verified before you can be certain. Many things there are in connection with it that we cannot speak of with full confidence, but in speaking of grape rot and apple scab fungus we can speak with a very strong degree of confidence.

There probably has never been a systematic spraying given grapes or apples at the proper time, with properly mixed Bordeaux mixture, without good results; but some years, under

some conditions, which as yet I don't know as the scientists are able to explain to us, there is a varying result, but a result which is always probably worth what it costs.

The apple scab fungus at this season is in the form of a spore. It is on the fallen leaves of the apple, on the limbs, bark and under the curves of the bark, hidden away in various places, waiting for certain temperature. I am not going to be exact as to the minutae, because no man wants to listen to a speech giving formula or exact conditions, and then attempting to carry those conditions in his mind until the time comes to apply them and then depend upon his memory for his work. He must go to the laid down rule for all those things. Because from the information sent out by our experimental stations we can collect very correct data so far as accurate information has been given. I think our government experimenters are, as a rule, very conservative people. There have been one or two sad breaks made by giving out information before it was ready, and that has taught caution. Those spores rest during the winter until a certain amount of heat and moisture in the spring cause them to become active and begin to give off spores, as you understand the manner of these living atoms. They build and grow upon the young and tender growths. When your apple leaves set, when the buds start, they will form on the stem, they will grow up the stem and take the youug apple almost before it is an apple. They will get on the foliage and gradually develope unless removed by some fungicide.

Copper sulphate has been proven, so far as we know, to be the best fungicide in the spore stage. It will kill it instantly by contact.

If allowed to live and grow and multiply and get on the leaf or on the tender stem when it is making growth, it will immediately plunge its roots below the surface or epidermis, and then all you can kill is that which is above the surface, while the roots below will send up new shoots, like quack grass and other weeds of that kind. If you could have destroyed the seed you would not have had the plant. After the plant is established you cannot destroy it by merely de-

stroying the top. I make this illustration so you may catch the fundamental idea of why you should spray. Most of us believe that one of the best times to spray is during just such weather as this is—warm, wet and murky, and in the winter while the spores are resting. If those spores can be killed in the winter, they certainly will not grow or be there in the spring. If you have destroyed even a large percentage of them you have made a start in the right direction.

That brings us down to mixtures. The ordinary bordeaux mixture is a disagreeable mixture to make and a great many farmers are a little bit slow about adjusting themselves to the use of it. At this time of year you can use pure copper sulphate in solution, one pound of sulphate to 210 gallons of water, and that is sufficiently strong to kill any of those living spores.

The Department of Agriculture at Washington made an experiment in tests of that kind, and if I have the correct figures, it was one part sulphate to four hundred thousand parts of water, which was found sufficiently strong to kill the spores or apple scabs. The amount of sulphate of copper was so insignificant that it was a wonder to me we have been using the amount we do.

Prof. Burrill—That was the laboratory practice where the mixture went right on the spore?

Mr. Morrell—I was going to say that was under perfect conditions to test the ability of the spore to stand actual contact with copper solution.

Of course we use it many times stronger; but it simply illustrates the fact that you may use mixture without the lime compound, and a very small amount of copper, and undoubtedly kill every spore you bring it in contact with. If used when you won't injure the growth of the buds, when they start in the spring you will work no injury whatever to your tree. After the buds start in the spring you must use the bordeaux mixture in a still weaker solution. And remember in spraying you must know exactly what you are spraying. It will never do to move from an apple orchard with a solution suitably strong for an apple orchard, into a

peach orchard or cherry orchard, because your solution will be too strong. You must go to the formula laid down, and use the utmost caution to make no mistake.

In the matter of grape rot, in has been proven to be one of the simplest things in the world to handle. But here is the difficulty with grape rot and scabs. Most people wait until they are whipped before they begin to fight. They wait until their orchards are a mass of fungii. They put off the day of spraying too long.

The effects of spraying are accumulative. Young orchards that have been sprayed thoroughly well the first year may show little results, by being in charge of men who are persistent, they year by year begin to improve in both fruit and foliage.

Remember that the apple scab attacks the foliage as well as the fruit, and in attacking the foliage it prevents the formation of sound buds, and takes away from the tree the ability to form buds or bear a crop. The principal idea is to keep the tree healthy. For that reason I say that a tree that has been years getting out of health through fungus troubles, may require a few years of persistent spraying to get it back into a healthy condition. So do not expect immediate results from your orchard that has been carrying this trouble for years until its bark is all roughed and its growth short and stubby, and the leaves each year become smaller, and warped, and twisted, and black. You will have to be patient with those trees. You will either have to lose them or patiently bring them back into life.

And I might as well say right here that spraying is not the only thing desired in orchard culture. It is only one of three or four things essential to successful orchard culture. Cultivation, fertilization and spraying are three most important features of orchard culture.

We have examples of orchards all over the country that have been barren, being taken in hand, and brought up through cultivation and spraying to a very productive point. I showed you a picture the other night of the orchard of a gentleman who perhaps has been as successful as any man

in our state in that line. He had an old unproductive orchard. It was sometimes productive, but was badly going down from the effects of scab, codling moths and various troubles, until it had got to a point that he didn't make any money out of it. About ten years ago he commenced spraying. Seven years ago he got a very nice crop of apples, and now he has had seven straight crops of apples, and it is the only orchard within ten miles of it that has done it.

This year he sold his apples at the station near home for two dollars and a half a barrel for No. 1, a dollar and seventy.five cents a barrel for No. 2, the barrels furnished.

MR. PEARSON—How old was the orchard?

MR. MORRELL—About thirty-five years old, and there are forty acres of it. This year is a light crop. I am not saying he had full crops every year. Last year he gathered over six thousand barrels from that orchard. This year the crop was not so large, but the price was better, and he sold forty-one hundred dollars worth of apples. The same with his pear orchard. He has taken off four to six thousand dollars worth a year regularly for the past six years. It really stands out there as a monument in orchard culture in one particular section of the country. He is a persistent sprayer, a good cultivator, and he does another thing, he feeds his hogs in the orchard. We departed from one good old practice, when we quit putting hogs in the orchard, because that is the way to get fertility back in the soil. We have neglected that. These things combined, have put his orchard in a thrifty shape. In addition to the fact the orchard bears good crops, it makes good terminal growths, good, new wood, full size foliage, good color, and the fruit will hang on until winter, and drop only when ripe in good order. He cultivates his orchard to this extent. In the spring he plows and cultivates it well and sows it with Canada peas. When those peas are in the dough he turns in from a hundred to a hundred and fifty hogs. A little later, he feeds them. He allows them to pick up the apples that fall, thereby getting the worms. It has got to a point where he does not have codling moths enough to make a mark on his apples. He allows the hogs to pick them up.

He considers them worth as much in pork as in cider. When he begins his apple picking he takes his hogs out of the orchard. He makes a great success of it.

We have other men around there who are doing the same thing, and invariably those men who are making a success are spraying carefully, and have got this formula in their heads: That they spray early and regularly, at proper times with proper mixtures.

MR. HOBBS—Does this gentleman of whom you speak use any arsenical poisons in his spray, when his hogs are in the orchard?

MR. MORRELL—His hogs are not in the orchard until the peas are in the dough, and his arsenical sprayings are before that. But hogs are not very susceptible to poison. If I were pasturing with sheep, I would be a little careful. I have always felt there was an element of danger by getting too much spray in one place.

PROF. FORBES—As a matter of fact, can you feed paris green to a hog and not hurt him?

MR. MORRELL—I don't know.

MR. CALLAWAY—Do you use copper sulphate on the grapes in the winter, the same as you do on apples?

MR. MORRELL—Yes.

MR. CALLAWAY—The same strength?

MR. MORRELL—Yes. You can use it on almost anything, but I would be a little careful in using it on the peach. The bud of the peach is not so well protected as the apple or grape.

When we come to the codling moth, and the various insects, we have a new proposition. Now we have got to kill something that is alive. In the other place we simply had to prevent it getting a lodgement. Now we combine our insecticide with our fungicide, to save labor. The parent moths lays her eggs at the time of blooming or immediately after. At the time of blooming, if you watch the apple bloom, they almost invariably open upwards and outwards, and as the bloom sheds the calyx begins to close, and the stamens which had been standing, wither and droop, and the calyx in time

will close up tight. If the apple is early it will turn down, and if blight has got on the stem of the apple it will sometimes encircle it, and the apple will drop. But the codling moth does not always lay its egg in this calyx if we can believe some scientific gentlemen, but it almost always does it. Consequently you want the poison there.

Now when to get it there is a very important thing. We are told in the books we must spray immediately after the bloom falls. Now that means exactly what it says. Many of our farmers neglect this in consequence of pressure of other work and postpone this important matter for a week or ten days, and then perhaps it is too late.

One trouble we have in spraying is in the insecticide of fungicide we buy. I buy the crystals and have no trouble. In paris green there has been strong competition. Pure paris green should contain fifty per cent. arsenious ingredients. Some of it has been found to be as low as nine per cent. Quite a large percentage of barytes has been used for adulterating paris green when mixed with it. You can test it yourself with what is known the amonia test. Most any of the bulletins will tell you how to test paris green.

Prof. Burrill—How about spraying for the second crop of codling moths?

Mr. Morrill—I don't do it, for the reason I have never had any luck at it. The only way to take care of the second crop of codling moths is to take care of the first crop, and I am sure that can be easily accomplished by a thorough spraying the first time.

Mr. Callaway—Should rain fall within thirty-six hours after you have sprayed, is it necessary to repeat the operation?

Mr. Morrell—No, I don't think so now. We used to understand it that way. If you use the bordeaux mixture with copper sulphate it will kill in one hour by contact with the parts. I don't know but it will kill in one minute. The only injury that the rain does, if you use copper sulphate alone, is that it might wash part of it off. If the spore

comes in contact with the copper sulphate it is dead at once. You want to have the copper sulphate always present during the season in which these spores are active.

MR. CALLAWAY—Suppose we spray in the afternoon and there should come a rain at night what effect would it have as to the codling moth?

MR. MORRELL—Go in and spray between showers. The proper way is to put this spray in the calyx when it turns up. When it turns down the poison is enclosed in there. Better spray between showers than lose the opportunity to spray.

Mr. Morrell exhibited certain patterns of nozzles for use in spraying and explained the manner of using them. Also the kind of tank used by himself. He exhibited the McGowan, the Calla Lilly, Vermorel and Straightaway nozzels to the audience.

PROF. BURRILL—What mixture do you use for the codling north?

MR. MORRILL—I use paris green in the proportion of a quarter of a pound of paris green to fifty gallons of water, and sometimes even heavier than that in the bordeaux mixture.

PROF. BURRILL—And as to the canker worm?

MR. MORRELL—The canker worm can't get much of a hold where the orchard is well sprayed. When it once gets a foothold it is hard to kill. But there can't any insect take paris green into its system and survive long. The best way I know of combating the canker worm is to prevent their going up the trees and depositing their eggs. No paris green should be used except in connection with lime any way.

PROF. BURRILL—Do you spray at all for corculio?

MR. MORRILL—No.

RESOLUTIONS ON SAN JOSE SCALE.

MR. HENRY AUGUSTINE—I would like, Mr. Chairman, to present a matter before we adjourn. I offer the following resolution:

WHEREAS, The 300,000 acres of apple orchards in Illinois are threatened with destruction by that dread scourge, the San Jose scale, which has now twenty-five distinct colonies in widely seperated localities of this state; and,

WHEREAS, This insect is sure death to apple, pear, peach, plum, hedges and shade trees, but if energetic measures are applied and at once, while this insect is still upon the young trees, it can be stamped out and its farther introduction upon diseased stock by unscrupulous dealers prohibited; and,

WHEREAS, It is known that in some states whole orchards and parks have been destroyed and that one nursery firm in a neighboring state whose stock is infected are now mailing broadcast their catalogues offering fruit and ornamentai trees at sacrifice prices to prospective planters; and,

WHEREAS, There is no law in this state as there are in other states to protect the fruit interests of the state against unscrupulous parties and no adequate authority for stamping out this insiduous enemy and preventing the loss of hundreds of thousands of dollars invested in the orchards of the state; therefore, be it

Resolved, That we, the members of the Illinois State Horticultural Society in annual convention assembled, realize that we stand upon the brink of an impending crisis in the destruction of the fruit interests of the state, and regreting the failure of the General Assembly at its regular session to pass adequate legislation, do most earnestly petition His Excellency, Governor Tanner, to amend his call for the special session so that the General Assembly may be authorized to enact such legislation as shall adequately protect the farmers and fruit growers of Illinois against this deadly enemy.

Resolved, further, That a committee of this Association be appointed to wait upon Governor Tanner and present to him these resolutions and ask his favorable consideration thereof immediately in view of the existing immergency.

The resolutions were unanimously adopted.

The chair appointed as members of that committee: H. Augestine, J. W. Stanton, F. D. Voris, O. W. Barnard, F. E. Williams, J. W. Riehl, C. W. Winn, H. R. Cotta, L. R. Bryant.

THURSDAY AFTERNOON SESSION—1:30 P. M.

Convention met pursuant to adjournment, President Goodrich in the chair.

REPORT OF DELEGATE TO MISSOURI STATE HORTICULTURAL SOCIETY.

J. W. STANTON, Richview.

The meeting of the Missouri state society was held in the court house at Moberly on Dec. 7, 8 and 9. I arrived at 1:50 A. M. on Dec. 8th, and soon became convinced that the attendance would be large at the meeting, for I was unable to get lodging at any available hotel. After spending a few hours with the night clerk at the hotel headquarters, the members began to appear and I was soon taken care of by Secretary Goodman and the other officers, who were very cordial. The meeting was well attended at every session. Iowa, Wisconsin, Kansas and Arkansas sent delegates; all of these gentlemen were active in the work and exhibited in the discussions the knowledge and information that can be gained only by practical experience.

The state societies of Arkansas and Kansas each had apples on exhibition. The fruit exhibit was large, and many new varieties and promising seedlings appeared among the exhibits. There is a demand in Missouri, as well as elsewhere, for something to fill the place of the prolific Ben Davis. Many are testing seedlings with the hope of this discovery; the large plantings in Missouri, however, still show mostly Ben Davis. The Gano is being planted more extensively, durthe past two years, than any new variety and bids fair to meet with favor, as it comes into bearing. This apple has the keeping qualities of the Ben Davis and is a bright red, of medium size, quality about same as Ben Davis. The delegate from Iowa had twenty-one plates of seedlings on exhibition, some of these were fine in appearance.

I was surprised to find no pears on exhibition. Having been appointed on the committee on fruits, I was called to examine the entire fruit display, consisting of 536 plates of apples. According to the rules governing the awards, each plate must receive a premium according to quality, the aggregate amount not to exceed $100.00—this being the amount set apart for premiums. Therefore the highest premium run about thirty cents per plate and the lowest about twenty cents. In this way, every exhibitor received something; the best collections would not receive more than $3.00 or $4.00.

Prof. Stedman, of the Columbia University, gave an interesting and instructive lecture on insects. I was sorry to note the fact that he seems discouraged in an effort to control the

San Jose scale in Missouri. The professor has visited only a small portion of the state and has located about twenty colonies of the scale. In some cases, large shade trees are covered and the conditions seem to be more alarming than in this state.

REPORT OF DELEGATE TO MINNESOTA.

ARTHUR BRYANT, Princeton.

Agreeable to the request from the President and Secretary, December 6, we took the evening train on the Chicago, Burlington and Northern road to attend the annual meeting of our Minnesota friends. This train, with its beautifully finished wood work, magnificent upholstering, carpeting and electric lights, is said by railroad men to be the finest in the world. However that may be it served us well, and promptly on time the next morning we found ourselves at the depot in Minneapolis.

We attended the morning session of the society, which was held in the county commissioners room in the Court House, found a goodly number present. Their attending membership probably numbers near 100. Last year their paid membership was over 600. The annual meetings are held in Minneapolis, the society having an office and library in the city. Their program, which was claimed to be quite satisfactory with them, and has been on trial for two or three years, is rather unique. A whole session being taken up on one subject, consisting of from five to ten papers, of from two to five minutes in length, on special phases of that subject. To me there seems to be some serious objections to obtaining the best results in this way, as so many consider the different points of the subject. For various reasons sometimes two or three of the papers are not presented at all, thus making a break in the plan of the program, and in the discussion that follows each paper, some are apt to branch off on ground that has been or should be covered by another paper. But in this way they avoid having any long, dry papers, which make their sessions much more interesting. The raspberry occupied the first place on the program, and from their discussions I should judge that they would select very near the same list to plant that we use in Northern Illinois. Several cultivators claimed that the Black Caps should not be trimmed in the summer, but that better ripened wood, and larger crops could be obtained when they were

not cut at all. A native ever-bearing raspberry caused considerable talk as to its merits, but did not receive much commendation from the more conservative members.

The display of apples was very good and especially interesting on account of the great number of seedlings on exhibition. Many of them were of fine appearance and should be of value in their State. In the vote for the best five apples for planting the Duchess and Wealthy were included in all lists, and most of the best seedlings shown were of that type. In an exhibition made by the Jewell Nursery Company there were a number of the Thompson seedlings shown, three or four being of good size and fine color, but probably none of them of special value to Illinois planters. Okabena, as on exhibition, was a good sized, smooth apple, evidently of Duchess decent.

The paper, "What Place Has Grass in the Orchard," solicited a good deal of discussion with the majority in favor of frequent cultivation. Prof. Green claimed that the continued use of commercial manures had a tendency to make the soil heavy, cold and clammy. That frequent crops of grass or other vegetable matter was needed on all our lands to make them more friable and lively, better fitted for the ground of all kinds of vegetation. On Thursday afternoon a very pleasant feature of the program was the presentation to the society of a photographic group of the older members, and also the portrait of Mr. J. S. Harris from La Cresant, one of the charter members, who has attended every meeting since their organization in 1866. Mr. Harris has been one of the most efficient workers in horticulture and says that he has never lost confidence in the final outcome of his State, and he still thinks that Minnesota will yet grow a large portion of their fruit supply. Several miles from the city is situated the University Farm School, which is under the direction of Prof. S. B. Green. Thursday evening was made to pass very pleasantly by a number of its pupils taking part in the program. This consisted of recitations and essays, with music by the University String band of ten or twelve instruments, and closing with stereoptican views of their work on the farm, studies in tree growth, etc. This gave one a good idea of their work, and evidently they are educating their young in the right direction to take up the work as the present laborers fall out of line. The last session of the meeting was taken up with eight minute papers on evergreens for hedges, for planting on the prairies and for uses about the home. Also a fine paper on "Our Native Cedars and Their Uses," by D. R. McGinnis, of St. Paul.

In closing I wish to speak of the chrysanthemums, geraniums, pinks and roses that so beautifully decorated the table in the hall, also those that were on exhibition, and the courtesy and kindly treatment shown by the members to your delegate, and their cordial invitation to our society to again send a representative.

REPORT OF DELEGATE TO WISCONSIN—1897.

J. L. Hartwell, Dixon.

The Wisconsin State Horticultural Society meets annually in the winter at Madison, usually in February. They also hold a summer meeting, during the berry season, which is not permanently located. The attendance at the latter is largely local.

The winter meeting fairly represents the state, as many who attend are delegates from local societies whose expenses are met by the state society.

In addition to the regular state society meetings, there are a large number of local societies.

Wisconsin has also a well organized system of farmers' institutes, in all of which the subject of horticulture is ably presented by one or more of the corps of regular institute instructors

That there is much enthusiasm therefore in many sections of the state along the lines of horticulture is not to be wondered at.

It has been my privilege to attend two of the winter meetings as a delegate from this society, both of which I have found pleasant and profitable.

No state has done more persistent or intelligent work than Wisconsin to solve the problem of hardiness, and the results of their investigation should be of great value, to Northern Illinois especially. The veteran nurseryman, A. G. Tuttle, of Baraboa, was one of the first, if not the first, to experiment with Russian varieties of apples in this country.

The discussion of that topic by Mr. Tuttle, Prof. Green of the experiment station of Minnesota, and Prof. Taylor of the agricultural college of Nebraska, all of whom had made special study of the Russians, the latter in their own country. This discussion was helpful in clearing away the fog that has settled around the question of "Hardy Russians." The following points were brought out: Russia has as great a diversity of soil and climate as has this country. The success

in orcharding there is not so much due to hardiness of varieties as thoroughness in methods of care and cultivation, *e. g.*, in extremely dry falls that a tree may go through the winter in good condition the ground around its body is formed into a kind of basin and filled with water. Orchards there given the same care as is customary here would be practically valueless. A tree that is hardy in Russia is not necessarily hardy here. Of the hundreds of Russian varieties tested in this country not more than five or six are of any practical value here. Nearly all of the winter varieties there are either summer or fall varieties here. Most varieties drop their fruit badly before maturing it. Most Russians have a strong predisposition to blight.

Wisconsin's most valuable contribution in the line of hardy apples is found in the seedlings, which the state has produced, the most important and best known of which are: Wolf River, McMahon, Pluvis' Cider, Utter's Red, N. W. Greening, very fine specimens of which were on exhibition at the winter meeting, Feb. 3-5, 1897.

An experimental orchard has recently been established for the purpose of testing these and other new varieties.

The society was very pleasantly and instructively entertertained by Prof. Otto Lugger, state entomologist of Minnesota, who gave a lecture on entomology, illustrated with stereoptican views of many insects useful and harmful. He brought out the fact that while the curculio has a sucking mouth it also has breathing organs at the end of its back which enables us to destroy it by spraying with poison when it first appears in the spring, at which time it eats more or less of the newly developing buds. While he recommended spraying for the codling moth, he thought it wise to use other methods to rid the orchard of this pest. Tying many folds of paper or cloth around trunks of trees as traps for the worms. Should occasionally remove the "trap" and run it through an old clothes wringer.

Mr. Parsons, in a paper on mulching, recommended putting a light coat of coarse manure between the rows of cane fruits and working it in with cultivator, the chief value of which was holding moisture.

The society is trying the experiment of publishing a monthly magazine, called The Wisconsin Horticulturist. Last year it was edited by Sec'y Philips, this year by Mrs. Franklin Johnson, of Barabbo. It is sent to all regular members of the society free, and to others for fifty cents per year. The editor is elected by the society the same as other officers.

A large part of the program is devoted to the discussion of varieties, which I think is time well spent.

The fruit exhibit was large and the specimens in good condition, many of them extraordinarily fine, especially the Wolf River and North-Western Greening, exhibited by a farmer from the west portion of the state.

Messrs. Hobbs of Indiana, Colman of Iowa, and Morrell of Michigan, respectfully thanked the convention for voting them in as honorary members of the Illinois State Horticultural Society.

On motion of Mr. Dunlap, the convention adjourned.

SWEET POTATO GROWING IN MISSISSIPPI.

(Communication from G. W. McCluer.)

JACKSON, Miss., December 18, 1897.

To the Illinois Horticultural Society, H. M. Dunlap, Secretary:

MY DEAR SIRS—Believing that one of the first essentials to being a life member of your (our) society is that the said life member shall be alive, I write to let you know that such is my present condition.

I wish you success, pleasure and profit in our meeting and will add for myself the wish that the fates had ordered it so that I might be with you. In lieu of the latter I have invited myself to write you a short article which I shall call "A Year's Experience with, and Observations on, the Sweet Potato."

The sweet potato of the south is decidedly more important as a food crop than people of the north would be likely to imagine. During its season, which lasts from the first of October to the first of March, it is used by all who happen to have a supply, and every one tries to have them. One of the men on my place, with a family of eight, told me he only had about sixty bushels and he expected to use them all up between Christmas and March.

Another man told me that if he had a good bank of "taters" and a few bushels of peas (cow peas) he could get through the winter in fine shape. A third man told me that potatoes took the place of bread at his house as long as they lasted.

In the Chicago markets sweet potatoes are divided into two classes—Jerseys and sweet potatoes. Down here the division is yam, and not yams. The yam, as distinguished

from the rest, is much sweeter and juicier when cooked. The varieties of yam vary among themselves in color, texture, flavor, sweetness, etc. This difference is so marked that people do not always agree as to which are yams and which are not.

There is a prejudice in the north against the yam. I can only account for this on the supposition that northern cooks do not understand preparing them. There are very few northern people who do not prefer them from the first if well cooked. But I am not an authority on cooking and had only intended to tell you of the methods used in growing.

The potatoes are bedded any time from the middle of February to the last of March. Hotbeds are very seldom used. A bed of loose, rich earth is thrown up, like the old-fashioned garden beds, and the potatoes are laid on this and then covered with the same kind of soil. Often, but by no means always, a southern exposure is selected. Sometimes a supply of litter is got ready to use as a cover when there is danger of frost.

All the plowing here is done with a single horse, using a plow which turns a six or seven inch furrow. Four to six furrows are thrown together, and this may be repeated several times before planting is done. Planting in the field usually begins the latter part of April and is continued as plants can be had and the ground is in condition. By the first of June the plants first set will have made vines of from a foot to several feet in length and from this time on the planting is done almost exclusively from these vines.

The vines for planting are cut up into lengths of ten to fifteen inches. These pieces are dropped at proper intervals on the middle of the row and a man with a stick pushes them into the ground. Two or three sharp raps to settle the soil about the vine finishes the operation. Perhaps three-fourths of all the planting done is from vines. Planting in this way often continues as late as the first of August.

It is a common thing to hear the expression, "Vines makes better 'taters' and quicker 'taters' than draws." It is a very general opinion, too, that potatoes from vines are better for seed than those from draws. All the varieties I grew the past season, with the possible exception of the Jersey, certainly seemed more regular in shape and smoother when grown from the vines. I think there would be an excellent field for improvement in varieties by careful selection. The average farmer seems to keep two things in view in saving seed—first, save from the vines rather than from draws—and second, save

those that are too small to eat. I noticed before that there was a difference in the varieties of yams. It is equally true that the varieties themselves are not uniform. The Jerseys are not all alike, either in growth or in eating quality. By paying some attention to individuality improvements ought to be made.

Cultivation is comparatively simple. It usually consists of plowing the dirt away from the plants once, then a hoeing in the row, and after this throwing the dirt back to the row. The later plantings often receive no attention until digging time.

Digging is done with the plow. Each row is plowed out at three, four or six furrows, as the case may be. Hands follow the plow, pick up the potatoes and throw them in piles, usually throwing five or seven rows together. After the potatoes have dried awhile, they are gathered up in large baskets and put in larger piles, where they are covered with litter and left for two or three weeks. They are then sorted over, to pick out those that are started to rot, put in piles of twenty to forty bushels, covered with straw or cornstalks, and this with a light covering of earth, and then above this a rude shelter of boards to shed the rain.

The potatoes here do not keep as well as the Jersey does in the hands of careful growers. The crop of edible potatoes is usually about exhausted by the first of February, either used or rotted, and in many cases even that stored for seed is spoiled. I am not sure this is the result of improper handling alone or whether it is in part due to the varieties being more liable to decay with the same care. Rough handling and improper storage are certainly responsible for much of the poor keeping.

There is only a local market here for sweet potatoes, as for most other things grown on the farm. About the only thing for which there is a shipping demand among the merchants is cotton. But Jackson is a good, though limited, market for potatoes and prices seem to range from $1 or more for the first, down to 40 cents, back to about $1 again for the last of the crop.

The crop varies according to soil, care, growing season, etc. The past has been an exceptionally hard year for most growers. One man with thirty-five acres dug 900 bushels; another with one acre dug 200 bushels. It is usually expected that the crop will range from 100 to 200 bushels per acre.

The varieties grown are nearly all classed as yams, and there is a good deal of uncertainty in nomenclature. The

variety which seems to be grown most is called Georgia yam, Georgia buck, pumpkin yam, etc. Bunch yam is a well recognized and commonly grown variety, to which the chief objection seems to be that it does not furnish vines enough for planting. Tennessee yam and old-fashioned yam are names that have been given me for other well marked varieties. I have seen no one here who had ever known or seen the Jersey, and from its appearance it will sell readily for a yam. Of course the difference in quality would soon condemn it, but if it has better keeping qualities I should expect it would be a good kind to sell in the spring after others are gone.

I have found two chief difficulties in growing potatoes here; one, a fungus disease which I have not had named, causes the vines to die, beginning just below the surface of the ground; the other the common mole runs along the rows and tears and disfigures if it does not eat the potatoes.

On the whole, I am very well pleased with the possibilities of this as a potato growing location.

EXECUTIVE BOARD MEETINGS, 1897.

*SEPTEMBER MEETING.

Board met at the St. Nicholas hotel, Springfield, Sept. 27, 1896, at 7:30 p. m. Members present were President Goodrich, Augustine, Hartwell, Winn, Stanton, Webster and Secretary Dunlap.

The Secretary read a letter from Mrs. Hammond, making claim for station rent, etc. On motion of Mr. Webster the claim was referred to Mr. Augustine with authority to make a settlement with Mrs. Hammond and to report action taken to this board, together with a list of all stock in station No. 5, with number of trees of each variety.

Mr. Augustine moved that the ad-interem committee report the lists of varieties of fruits recommended for each district. and the reports of the district directors of experiment stations be referred to the several district societies with request that they include them in program of district meetings. Carried.

Board met at 8 a. m., Sept. 28th, at the Society's room in the capital building. Present, same as before. The subject of the program for annual meeting was taken up and di cussed at length and arranged.

[*NOTE—Minutes of the January meeting were printed in volume 30.]

On motion it was decided that the completion of the program be left with the Secretary and President with authority to act.

On motion of Mr. Stanton the appointment of delegates to the meetings of other State Societies was left to the President and Secretary.

The report of the auditing committee was adopted and the Secretary was directed to draw warrants in favor of the following parties in the amounts named, viz.:

J. Webster	$ 20.25
L. N. Beal	20.50
J. W. Stanton	20.50
J. W. Stanton	22.40
J. W. Stanton	5.50
J. L. Hartwell	28.26
H. M. Dunlap	3.75
J. Webster	8.25
T. E. Goodrich	21.00
H. Augustine	6.10
C. G. Winn	17.00

FROM EXPERIMENT STATION FUND.

H. M. Dunlap	77.27

NONEMBER MEETING.

Board met at the Palmer House, Chicago, November 4, 1897, at 7 p. m. Members present were President Goodrich, Bryant, Augustine, Stanton, Webster, Winn, Hartwell and Secretary Dunlap.

On motion of Mr. Hartwell it was decided to offer the same premium list as last year.

On motion of Mr. Augustine it was decided to print the same number of copies of the annual report as last year, viz.: 5,000.

Mr. Bryant moved, and it was carried, that a group of pictures of the organizers of the State Society who were still living and who were members of the old Northwestern Horticultural Society at its last meeting in Alton in 1856, be published in the next volume.

On motion of Mr. Hartwell it was decided to publish along with the above group one also of deceased members of the old Northwestern Society.

Mr. Bryant was appointed a committee of one to select these groups and prepare a paper on the history of the organizers of the Illinois State Horticultural Society, and that the same should appear in the program of the next meeting.

Mr. Augustine moved that the chair appoint a committee of three on obituary notices to report at the annual meeting. Carried.

The chair appointed as such committee Dunlap, Augustine and Bryant.

On motion of Mr. Augustine the Secretary was directed to employ a competent stenographer to report the proceedings of the annual meeting.

Mr. Stanton moved that the sum of $75 be set aside for the purpose of defraying the expenses of the district meetings. This amount to be appropriated to each district and warrants drawn for same in favor of the Treasurer when proper vouchers are filed with the Secretary for expenses actually incurred in holding such meetings. Carried.

Mr. Stanton moved, and the motion was adopted, that the President and Secretary were directed to advertise for bids for printing the annual report and to let the contract for same to the lowest responsible bidder.

Mr. Augustine moved that the legislative committee be requested to make a report on the San Jose scale bill before the last legislature to the Society. Motion Carried.

BILLS ALLOWED.

J. W. Stanton	$ 6.00
A. Bryant	8.20
T. E. Goodrich	26.15
J. L. Hartwell	8.65
H. M. Dunlap	6.00
J. Webster	20.39
H. Augustine	11.87
H. Augustine	4.75

DECEMBER MEETING.

The Executive Board met at the St. Nicholas hotel, Springfield, Monday, December 27th, 1897, at 7 p. m. Members present were: President Goodrich, Hartwell, Webster, Stanton and Secretary Dunlap. There were also present the newly elected members of the board as follows: H. R. Getta, vice-president of the Northern; George J. Foster, president of the Central, and H. L. Doan, vice-president of the Central societies.

Minutes of the last meeting were read and approved.

The secretary asked to be relieved from serving on the obituary committee appointed at the last meeting of the board and the chair named Mr. O. W. Barnard to act in his stead.

H. L. Doan was appointed on the auditing committee.

On motion of the secretary it was decided to set apart one page each of the annual report to deceased members, as a memorial page.

Mr. Augustine made a verbal report to the committee of station 5, as to the pending claim, and on motion it was referred back to the committee on control with directions to ascertain on what basis the claim could be settled and the station continued. The committee to report back at the next meeting, and to have full powers to complete a settlement.

The expense bills of the Northern society were presented with a statement of the treasurer, L. Woodard, attested by his affidavit that expenses had been incurred to the amount of $75.00. The resolution of the board providing that original bills of expenses be filed with the secretary of the State society, and this not being in regular form no warrant had been issued for the amount. On motion of Mr. Hartwell the secretary was instructed to issue a warrant in favor of the treasurer of the Northern society for $75 00.

Mr. Hartwell moved, and it was adopted, that life members of the several district societies be furnished with back reports of the society the same as though they were life members of the State society; provided that the fee of life members of the district society be not less than that of the State society.

The auditing committee made a report approving bills and the report of the committee was adopted and the secretary ordered to draw warrants for the amounts.

H. M. Dunlap, Secretary.

WORK IN EXPERIMENT STATIONS—1897.

Station No. 1, Princeton—Arthur Bryant, Superintendent.

The apple, pear, plum and cherry crop in the vicinity of this station was generally light, and a very large share of it imperfect. Of apples at this station there were quite a number of varieties that set more or less fruit, but as there are many orchards in the vicinity the few samples that were on the young trees had but little chance to escape, and were nearly all injured by the codling moth, scab, or prematurely

ripened by the drouth, so that when the season for gathering them arrived, there were but few specimens left to make a report on their merits.

APPLES.

Yellow Transparent—Set and matured a moderate crop of very fine fruit. The greatest fault this variety has is its tendency to blight both in orchard and nursery.

McMahon—Had a fair crop of good sized specimens of fruit. This seems to be a vigorous, hardy variety, fruiting early; ripens September to October; desirable only for limited planting.

Aiken—Fruited a little on some young trees; most of them dropped before they were mature. The Winesap is not a success on our soil and I fear that the Aiken partakes too much of the characteristics of that variety to do well here. The fruit so far has been too small to take well in the market. More or less fruit set on, the Caffelt, Dark Red Seedling, Peter, Borsdarfer, Zuzoff, Meaders Winter Crab, Repka, Malenka, Nero, and several others, but they all dropped before the fruit was mature, so that we cannot make any intelligent report on them. Generally the trees of all kinds made a good growth the past season. There was some blight on the pears and a little on some varieties of apples.

PEARS.

The pears that were first planted at this station have been very unfortunate. All except the Keiffer (and they are considerably affected) are dead with the blight. Most of the younger trees are fairly healthy, though some are injured from the same cause.

The soil at this station is not a very favorable one for the pears, being a black loam, but well drained.

There was no fruit to report on.

PEACHES.

The fruit buds on the peach trees were all killed in winter, consequently no fruit. The trees are generally healthy, made good growth and at the present time in good condition for another year.

PLUMS.

A frost with a cold east wind following it, destroyed most of the bloom on the Japan and many of the European varieties. Some of them set a little fruit but it nearly all dropped before maturing.

Potawattamie—Had a full crop: too many, so that they were under size. This is undoubtedly one of the most productive of the Chickasaw varieties. When properly thinned, is of very fair size and good quality.

Miner and De Soto—Had good crops; these are well known and are valuable varities.

Hawkeye—Bore a moderate crop of nice fruit; this is one of the best of the native varieties.

Rockford—Bore a full crop for the first time: this is a small dark colored fruit with firm flesh of very peculiar flavor; small and not at all attractive in appearance; it has but few desirable points to recommend it.

All the European varieties were so near a failure that we have no report to make on their fruiting. The growth on nearly all was very satisfactory, and all seem in good condition for another year.

CHERRIES.

The two trees of carnation bore a fair crop of fruit. Birds were very plenty when the early cherries began to ripen and took them as fast as they colored. This variety is a very vigorous, healthy tree, and I think would yield on our soil very moderate crops of fruit of fine quality.

Northwest—Had a considerable fruit on it, but being quite early we saved but few specimens. So far this tree has never set a large crop of fruit and I doubt whether it will ever equal the Richmond in bearing qualities. Its earliness may give it some value to the amateur planter.

Dyehouse—Bloomed very lightly, and of course the crop was light.

Trees of Ostheim, Osthimer, Montmorency and Bess Arabia had a few specimens on but very few come to maturity.

Several young trees of Russian varieties are vigorous and healthy, but have not yet shown any fruit.

Suda Hardy—Last season had a moderate crop; this year they matured a full crop of very fine fruit. This is undoubtedly one of the best coming cherries, being very productive

and ripening late; when other fruits are plenty it escapes the ravages of the birds. Evidently as an early bearer it is one of the most promising varieties I have fruited.

Our tree of Japan Walnut passed through the last winter in good condition and perfected several bunches of nuts. The nuts are smaller than our best native butternuts, and I think are not much, if any, superior in quality. I think when the tree gets well established that it will ripen its wood thoroughly; it is said to be very productive.

QUINCES.

The Fuller had a nice crop of fruit of good size and fine quality. Trees of equal size of Meech's Prolific and Orange bore no fruit.

GRAPES.

Green Mountain—Had a moderate crop. This variety has a very vigorous, healthy vine, but for some reason has not been very satisfactory in its fruiting, much of the fruit shriveling and dropping before it was mature. Perhaps my method of handling was at fault, or our soil not favorable for its best development.

Eaton—Had a little nice fruit. This variety is desirable for the amateur, but not productive enough for profit.

Esther—A light crop of very nice fruit; clusters not large but well developed; vine seems vigorous and hardy. This variety is worthy farther trial.

Rockwood and Colrain—Had but few bunches of fruit; would wish to treat them farther before passing judgment on them.

Elvicand—Is a very vigorous vine and bore a little fruit this year; I doubt whether it will be of much value to us.

Berckmans—Seems vigorous and healthy; bore a few small bunches this year; fruit and bunches small, of very pleasant flavor; perhaps of value as a variety.

Geneva—White vine healthy and vigorous; had a few samples of fruit which seemed worthy of farther examination.

Plants of Campbell's Early, Alice, Leader and Columbian, set this spring, made a good growth and are in fine condition for another year.

BLACKBERRIES.

Two years ago we made quite a plantation of the Badger from Wisconsin; this year they bore a heavy crop; some

claim that it is identical with the Snyder; they certainly are very much alike both in growth of plant, appearance and quality of fruit.

Minnewaska—Wintered very well; bore a full crop of fruit of fine quality.

Piasa—Gave a good crop: this is a fine berry, of good size and excellent quality; wish to know more about it.

Eldorado—Procured as Fard's No. 1, wintered well and matured a fine lot of large berries; I am very much pleased with its appearance; should it prove hardy is valuable for this district.

Ohmer—In growth was vigorous but gave very little fruit; I think it will be easily affected by our winters and of little value to us.

Maxwell—Of no value to us; to tender for Northern Illinois.

The Jordon—Was badly injured by the winter and gave no fruit.

The Evergreen blackberry still winter kills.

RASPBERRIES.

My report of last year on most varieties will not be changed. Kansas, Eureka and Older are with us the best black varieties.

Smith's Prolific—Black gave a good crop of medium to small berries; too soft for market; rather sour.

Black Hills—Berry medium size, dry, sour, rather crumbly, light crop.

London—Planted in 1896, productive, berry large, fine flavor, very promising.

Columbian—Very strong grower; productive; was injured some by winter; berry large; color against it: doubt whether it will please as well as the Schaffer; where that variety will succeed.

CURRANTS.

The currant crop in our vicinity was a moderate one. A frost and cold rain just as they had bloomed injured the setting of the fruit. What fruit matured was generally fine.

Wilder and *Ruby Castle*—Still give satisfaction and are valuable varieties.

This year the North Star was not as good in size and quality as Victoria and the bush no more vigorous or healthy.

Pomona—Received as Knights Improved gave some fruit on young plants and promises well.

Crandall and *Champion*—Fruited freely and are both valuable where a black currant is wanted.

Franco-German—Similar to Long Bunch Holland; is a vigorous grower but gave no fruit this year.

GOOSEBERRIES.

Like the currants the gooseberries were affected by the weather but where they were a little protected gave a full crop.

Pearl—On young bushes produced well; is very vigorous; quite similar in growth and fruit to the Downing.

Champion—Showed a considerable fruit; not much mildew.

Early Orange—Healthy and vigorous; crop light; fruit medium in size; of best quality; valuable as an early variety.

Puyallup—Trumpt and Columbians had very little fruit; some mildew.

Keepsake—Crown Bod and Whitesmith were too young to fruit much; all had some mildew during the season.

All the gooseberries were sprayed once with Bordeau mixture.

STRAWBERRIES.

Tennessee Prolific—Berry dark colored, most of them regular shape, some have tendency to coxcomb.

Beverly—Good sized, light red berry. Flesh firm, white inside.

Mexican—Large, smooth, light red berry, with a good sized core that adheres to the calyx very tightly. It is not a very firm berry, nor very acid. Peculiar flavor.

Tennyson—Fair crop. Berry medium size, round and light red. Tolerably firm. Good quality. Plant fairly strong and healthy.

Annie Laurie—Berry large, round, firm and dark colored. Quality first rate. Plant vigorous and promising.

Edith—Berry large, dark colored, quite irregular in shape. Quality good. Plant vigorous, but few runners.

Rio—Medium size, smooth, regular shape. Quality good.

Auburn—Smooth, flesh dark colored clear through. Quality very good.

Mary—Large, round, dark red berry, rather irregular in shape.

Gardner—Berry smooth, oblong, light red, rather soft.

Piper—Medium size, dark color, very firm flesh. Calyx large and prominent.

Charles—Berry small, round, smooth and rather soft.

Bisel—Berry bright red, medium size and irregular. Flesh fairly firm. Fairly good shipping berry.

Lady Thompson—Berry medium size, light red, quality good, flesh fairly firm. Promising berry. Plant not very vigorous.

Splendid—Berry medium size, bright red, fairly firm—promising. Plant vigorous and healthy.

Sparta—Berry medium size with long neck and large calyx. Plant fairly strong.

Phillips' Seedling—Berry good sized, bright red and irregular, with a very pleasant agreeable flavor—promising. Plants vigorous and healthy.

Fountain—Berry large, smooth with tendency to coxcomb, dark colored, firm. Calyx adheres tightly to the berry. Quality best.

Brandywine—Berry large, regular, firm, medium dark, pleasant acid. Calyx very large and prominent. Productive.

Iowa Beauty—Fair crop. Berry light red, medium size, coxcomb shape, rather soft, flavor medium.

H. W. Beecher—Good crop. Berry very large, dark red, firm, pleasant flavor. Tendency to coxcomb. Promising berry.

Marshall—Berry medium, oblong, dark red, medium firmness—sweet.

Sunnyside—Berry good size, irregular, colyx large, flavor sharp, acid.

The strawberry season was from June 6th to June 28th.

In the spring of 1897 there were planted at this station the following trees and plants:

Apples	5	Varieties.
Pear	1	"
Quince	1	"
Plums	5	"
Peach	4	"
Gooseberry	2	"
Grapes	4	"
Raspberry	3	"
Strawberry	23	"

For list of varieties in the stations in this district, see report in Vol. 30.

STATION NO. 2, NURSERY—J. V. COTTA, Superintendent.

APPLES.

The following varieties, planted from 1887 to 1893, were deemed unworthy of further trial. They were dug up and their places filled with new trees: Red Anis, Pipper's Sweet, Horner's Winter Wine, Winnebago and Harvey for inferior fruit; one Longfield and one McMahon, top-worked on Milton crab, for want of affinity between stock and scion, and Romeusko, Antonovka, Enormous, Pineapple, Romna and Repka Malenka, for blight.

Below I submit a list of varieties that have fruited at this station, with brief notes as to their merits and faults:

Aport—Ten years planted; a large, handsome apple of good quality; September, October; very shy bearer; not valuable.

Arabian—Nine years planted; bore a few specimens of medium sized fruit of fine quality; shy bearer; not valuable.

Ben Davis—Top-worked; planted ten years; an early, regular and abundant bearer of large sized, beautifnl fruit; valuable.

Black Annette—Top-worked; early and regular bearer; fruit medium and below; dark red; good quality; late keeper; promising.

Blue Anis—Too small; September, October; no value.

Berkoff—Slow grower; shy bearer; no value.

Beecher's Red Crab—Bright red; good quality; very productive; September; promising.

Babcock's No. 4—Top-worked; good size; smooth; good quality; winter; early and good bearer; promising.

Babcock's No. 5—Top-worked; fruit smaller than No. 4; lacks color and quality and does not keep well; not promising.

Clark's Orange—October, November; has no decided merit.

Dr. Walker—Good color, fair quality, but too small for a profitable winter apple.

Dickinson—Seedling of Yellow Bellflower; same shape and size, but less attractive in color; early bearer; needs more time to determine its value.

Fall Orange—Top-worked; good bearer; large, smooth; of good quality; October, November; valuable.

Garfield—Top-worked; good bearer; good size; beautifully striped; handsome; best quality; a valuable late fall apple.

Greenstreak—Large, handsome fruit; acid; cooking only; September; blights; of doubtful value.

Grimes' Golden—Top-worked; productive; medium size; best quality; late fall and early winter; should be planted in every orchard for home use.

Hamilton—Tree hardy; stout grower and early bearer; seedling of Duchess; fruit medium to large; bronze yellow; rich sub-acid flavor; a promising late fall sort.

Hibernal—Tree hardy and productive; fruit large, flat, striped, sour; not good enough in quality where better sorts can be grown.

Hunt—Very shy bearer; fruit large, showy and good; fall; not wanted.

Johnson—Too small for anything; not wanted.

Iowa Beauty—Large, bronze yellow, with pale red stripes; good quality; September, October; tree hardy and an early bearer; promising.

Indian—Fruit similar to Ben Davis in size, color and quality; tree blights badly; not to be recommended.

Isham Sweet—Top-worked; a large, beautifully colored apple of good quality; may become valuable for a sweet fall fruit.

Long Arcade—Bright red; oblate; sub-acid; September; promising.

Longfield—Has produced more fruit than any variety at this station; very early bearer; fruit of good quality, but too soft for market; strictly a family apple.

McIntosh Red—Bore the first fruit (a very light crop) this season, after being planted ten years; has nothing to recommend it here.

McMahon—A large, handsome, pale yellow, acid cooking apple; September, October; not valuable for market.

Melon—A large, beautiful apple of best qualty for the table; August, September; tree hardy and fairly productive; promising.

Milwaukee—Planted 1893; bore the third crop this season; fruit of good size, handsome coloring and of good quality; late fall and early winter; one of the most promising varieties in the entire list, both for market and home use.

Nathusins—An early and abundant bearer, but blights some; fruit above medium size, conical shape and very beautiful; September, October; quality no better than Ben Davis; drops early; too faulty to be recommended.

Nero—Top-worked; tree very spreading; an early bearer and hardy; fruit resembles Minkler and is of good quality; a promising winter sort.

Niel's Keeper—Hardy tree; early bearer; fruit too small for profitable orcharding.

Newell's Winter—Renamed from "Orange Winter" by Wisconsin State Horticultural Society; a large, bronze yellow apple of good quality; tree hardy and an early and abundant bearer; promising.

Patten's Greening—A hardy, productive tree, somewhat subject to blight; fruit large, greenish yellow, of handsome appearance and good quality; September, October; promising.

Patten's Famense—A seedling of snow apple; fruit larger, lighter in color and several weeks earlier than its parent, and of excellent quality; very promising.

Perfection—A Wisconsin seedling of Tetofsky; tree perfectly hardy and symmetrical; fruit as large again as Tetofsky and of better quality; August, September; very promising summer apple.

Peter—Tree resembles Wealthy in habit and foliage; fruit higher colored and a later keeper than Wealthy and much like it in quality; September, October; very promising.

Raspberry—Fruit bright red, pretty, but very small; no value.

Red Raspberry—Good bearer; hardy tree; a highly colored apple of fair quality; September; too small for profit.

Red Queen—Tree blights badly; poor bearer; no value.

Salome—Top-worked; early bearer and very productive; fruit of full medium size, well colored and of excellent flavor; a winter apple that has come to stay.

Scott's Winter—A slow growing but hardy tree; fruit of medium size, striped, quite acid; quality fair.

Smelling—Tree blights; no value.

Sweet Russet—Not an early bearer, but becoming productive with age; a fine, large, conical russet apple of very best quality; late fall and early winter; promising.

Talman Sweet—A productive tree that blights some; an old standard variety that will have to be retained till something better takes its place as a winter sweet apple.

Trenton Early—A fine, large, yellow dessert apple of best quality; August, September; tree hardy and productive.

Twenty Ounce—Top-worked; only succeeds here when grown that way; a fine, large, late fall and early winter apple of good quality; promising.

Wealthy—All right; tree hardy and prolific; fruit large, handsome and of good quality; September, October; needed in all orchards.

Willow Twig—Top-worked; a good, productive tree when grown that way; a valuable late keeper.

Wolf River—Not an early bearer, but tree fairly hardy, becoming more productive with age; fruit very large, flat, handsomely striped; a fine apple of good quality; September, October.

Woodmanse—Good bearer; fruit smooth and of good flavor; but lacks color and is too small for profit; winter.

Wythe—Top-worked; bears fine crop of large sized fruit; tree tender; root grafted or budded; but promising when top-worked.

Yellow Transparent—Same as Charlottenthaler, Grand Sultan and White Transparent; no difference whatever; the tree is an early bearer and productive; but is more or less subject to blight.

Zuzoff—Fruit medium; conical; bright read and of fair quality; September, October; tree hardy and fairly productive after six or more years from time of planting.

PEARS.

Last year a number of trees—mostly Russians—were destroyed by blight. These were replaced by trees of my own growing, all top-worked, without charge to the society. There was but little blight this year among pears, while apples suffered much more.

Only two varieties fruited: the Keiffer bore a few specimens, not more than two-thirds the size of last year; and a few small specimens of Leipsic; most other varieties being not yet of bearing age.

PEACHES.

No fruit; the buds having been destroyed during the previous winter.

PLUMS.

No fruit on Oriental and European varieties.

Of Chicasaws the Robinson and Pottawattamie bore full crops, while Forest Rose and Prairie Flower, large, fine trees; bore only scattered specimens.

Among varieties of the American type De Soto headed the list with a fine crop of beautiful fruit; the Forest Garden and Cheney bore about two-thirds of a crop; and the Hawkeye and Rollingstone but a few specimens. Ida and Rockford bore full crops, but their fruit was small, with large

pits; and their dirty, brown color rendered them very unattractive in appearance. I consider them of no value, compared with De Soto and other fine sorts.

QUINCES.

Only one small specimen on a Champion bush; there was considerable blight on all varieties.

CHERRIES.

Early Richmond and Montmorency bore a full crop: Dyehouse about half a crop; Suda Hardy, planted in 1894, a late variety of dwarf set a nice crop of fruit. which was, however, all taken by the birds; Bouquet Amerelle, Bessarabian and Fraundorfer Weichsel planted in 1891 have bloomed very sparingly and set but little fruit so far, all of which has been taken by the birds.

GRAPES.

No fruit; owing to the late spring frosts.

CURRENTS.

Victoria bore a fine crop of good sized fruit; North Star appears to be no improvement over Victoria; Wilder and Ruby Castle bore fine, large fruit of best quality; they appear very promising.

GOOSEBERRIES.

Triumph, Puyallup, Chautauqua and the new French Spineless sorts all suffered badly from mildew; Champion and Red Jacket bore good crops, the former of small, the latter of good sized fruit, no sign of mildew; I consider the Red Jacket especially promising.

RASPBERRIES--BLACK.

Eureka is a fine, large, early berry of value; Older, of medium season, valuable for home use, but too soft for market; not more than one-fourth of a crop, owing to late frosts; Gault of no value; Ohio, a fine, productive berry of best quality, too small in size; Gregg still holds its place as best late.

RASPBERRIES—RED.

Loudon is a large, fine, beautiful, bright red berry of best quality; requires good cultivation; promises soon to become the leading market berry; Black Hills and Marion's Favorite are less productive, softer in texture; their fruit being more or less spotted, they stand no comparison with Loudon; Superlative is tender in cane and has no value: Columbia is quite an improvement over the old Shaffer; being nearly exempt from scab, hardier in cane, much more productive, a better market sort every way.

BLACKBERRIES.

Barnard is our best early; Snyder best medium; Ancient Briton best medium too late. These are hardy, productive, of good size and excellent quality; Minnewaaski, Ford's No. 1 are large, but less hardy in cane and not nearly so productive. Other new sorts require more time before a fair decision can be rendered as to their merits.

MISCELLANEOUS.

Loganberry, Japan Mayberry, Salmonberry, Strawberry-Raspberry, Eleagnus Longipes, and Rocky Mountain Dwarf Cherry are of no practical value for any purpose; Japan Walnut kills to the ground every winter; and Parry's Pedigree Mammoth Japan Chestnut is of very doubtful value, the tree planted in 1892 being barely four feet high, after six years growth.

At Station No. 2 there was planted in the spring of 1897 the following:

Apples	15	Varieties.
Pears	6	"
Cherries	4	"
Plums	6	"
Peaches	10	"
Quince	1	"
Grapes	8	"
Gooseberries	3	"
Raspberries	7	"
Blackberries	4	"

STATION NO. 3, MARENGO—C. W. PRESCOTT, SUPERINTENDENT.

There was no fruit this year, and therefore can give nothing of value not reported in the last volume. Most

of the trees in this station are healthy and of good size. With a favorable fruiting year, there should be a good report another season.

STATION NO. 13, FREEPORT—H. R. COTTA, SUPERINTENDENT.

This station was established in the spring of 1897, for the purpose of testing small fruits only.

There were planted at this point the following plants:

Strawberries	68	Varieties.
Grapes	9	"
Gooseberries	2	"
Currants	6	"
Raspberries	11	"
Blackberries	4	"
Juneberry	1	"
Crunnells	1	"

All were very thoroughly and carefully cultivated and are at the present time in first rate condition and should give good results another year.

STATION NO. 4, SAVOY—H. M. DUNLAP, SUPERINTENDENT.

The fruit season at this station was not as satisfactory as we had reason to believe, from the setting of fruit buds last fall, that it would be for the testing of many new varieties in the station. The spring was of an unusually low temperature and rainy, and was what we call a backward season. At the time of blossoming, we were visited with a cold northeast rain, that lasted several days. The evident effect of this was to prevent the proper fertilization of the blossom, and the result, as stated, was disappointment so far as fruitage is concerned.

APPLES.

Among the new varieties of apples planted during the season are a number sent to me from the Arkansas station, known there under the names of Beach, Collins. Oliver, Turnfell, Holt, Hurne, Mock, Ragan, Arkansas Beauty, Skelton, Improved Shannon, Ozane. About twenty other kinds were added also.

The Nero bore a few apples, but they fell off before maturity. The tree of this variety grows very much like the the Minkler, strong and thrifty, with the limbs well shouldered where they branch from the main stem, giving assurance that they will not split down when in full fruitage.

The Dark-red Seedling, from Coatsburg, fruited quite abundantly. Is a red apple, large in size and poor in quality. It evidently is a good bearer, as the last two seasons indicate, but is only good for cooking purposes. Would discard it from the list.

Several of the Russian varieties had apples on the trees, viz: Hibernal, a large coarse apple that would give a hog the dyspepsia on account of its poor quality; as heretofore referred to, however, this variety is a strong grower and we commend it to those who desire a thrifty, hardy stock to top-work other varieties upon.

The Zuseff is a fine looking apple which ripens about August 25th.

The Transparent came to the front with a few well perfected specimens of fruit, and so far it is the only variety of the Russians that I consider has shown any quality that indicates that it is worthy of cultivation. This variety can be placed, without any more question, as worthy of cultivation, at least in a limited way for family use and local market and, where a large market is easy of access, they will pay well in the commercial orchard.

PLUMS.

Poole's Pride gave another large crop of medium size fruit. This variety is valuable for family use only, but is valuable for that purpose on account of its fruitfulness and freedom from worms.

The Missouri Apricot bore a small crop of fruit of small size.

Moore's Arctic were full of fruit early in the season, but all fell off before maturity. The fruit is covered with a rich bloom, and is of a deep blue color.

Forest Rose and also Prairie Flower, each had a small crop of fair fruit about the size of the Miner.

PEARS.

The Idaho showed for the first time in this station a tendency to blight. It has been in the station for seven years.

The Rutter, as shown by its fruit again this season, is not worthy of cultivation.

I am well pleased with the Keiffer, although it fruited but little this season. This is undoubtedly the best market pear for Central Illinois, and will be better liked as the knowledge of how to handle it is understood.

The Garber also bids fair to be a desirable variety, and is worthy of trial.

The Lincoln is not yet in bearing in the station but, if I may venture an opinion based on observation, I should say that no one will make a mistake if they plant the Lincoln. This variety is, however, not free from blight.

The Early Wilder had on a few large fine pears, of superior color and market quality.

CHERRY.

This station has had a number of varieties of cherry in it that came highly recommended by Prof. Budd, of Iowa, that have been planted since 1890, but so far they have borne but little fruit and that of inferior quality and size, although the trees have blossomed freely and we have had crops of Early Richmond. The varieties referred to are Suda Hardy, Ostheimer, Everbearing, Montmorency, Ordinare, Sappington, Carnation, Osthiem.

PEACHES.

There was no fruit of the peach in the station.

We tried Mr. Morrell's system of pruning, although we did not carry it out to the end of the season. So far as we are able to judge, the effect on the tree is most excellent. Intend to follow it out most thoroughly next year. The foliage is better and the trees show a thrifty appearance, a more stocky growth and the trees will evidently hold up a crop of fruit much better than when allowed to go unpruned.

GOOSEBERRIES.

The Pearl gooseberry planted last year, 1896, bore a crop of fruit of good size and appearance and the plants retained their foliage to the end of the season. The Industry and the Champion both were badly affected with mildew and lost their foliage early in the season.

GRAPES.

I am highly pleased with the quality of fruit of the Green Mountain, as also with its hardiness and bearing capacity. I should certainly recommend it highly as a desirable grape for family use and for local market, and in Southern Illinois I am not sure but what it would be a good variety to plant for the Chicago market.

It is especially valuable for three reasons: earliness, being a week or ten days earlier than the Moore's Early; its bearing, which is equal to the Concord, and for its superior quality as a table grape.

The Woodruff Red is also to be commended highly. I am sure it has come to stay, and as a red variety is equaled by few.

STRAWBERRIES.

A number of varieties were planted in this station in 1896, and I report upon them briefly. There were a number of seedling varieties originated by Rev. J. R. Reasoner, of Ogden, this county, that will be mentioned by number:

No. 47—Berry large; medium late; of fair flavor; plant a small grower; prolific bearer.

No. 68—Large, thrifty plants, with good foliage; berries large but few in number; we have better.

No. 36—Late; of good quality and large berry.

No. 1—Dark green foliage and thrifty plants; berry large, bright red clear through; firm; better flavor than Warfield; not so acid; this is good and likely to prove valuable.

No. 12—Of good promise, berry like Cumberland in shape, plum like and smooth; medium size plant; prolific bearer.

No. 25—A dark red berry of excellent flavor and quality; firm; of plum shape; prolific.

No. 30—A good berry; late; prolific; of good size.

Some of our strawberry growers should place themselves in communication with Mr. Reasoner and should visit his plantation at Urbana in fruiting season.

Parker Earle—Is all right.

Gardner—Feel confident that this variety will prove valuable; will test further.

Glen Mary—Thrifty plants, with a dark green foliage; was a shy bearer with me this season.

Arrow—Plant of light colored foliage; fairly prolific bearer; medium.

Sunnyside—Thrifty plants, with medium foliage; berry good size; prolific.

Bismarck—Large berry of inferior quality; prolific bearer; late.

Wm. Belt—Light colored foliage; medium grower; fruit of good quality, color and firmness; yield light as compared with others.

Enormous—I do not regard as very valuable; fruit not very regular and plants not productive; fruit soft and not extra large.

Lady Thompson—Foliage badly affected with rust; fruit of good quality and firm; early.

Commander—Very shy bearer this season and fruit small; plants scattering.

Brandywine—Good market berry of fair quality; plants below medium.

Cyclone—Of small size in berry and plant.

NUT TREES.

I would like to suggest to the management of our stations that now that the timber is being cut away rapidly that some concerted effort should be made to encourage the planting out of nut trees along the roadsides and in the corners of the farm and about the farm buildings. Nothing will so encourage this as example and the known fact tested by experiment that they can be easily grown upon the prairies.

I would suggest, therefore, that the stations so far as possible should take up this work and plant out some of the more common nut trees, such as hickory, walnut, butternut, pecan, beech, almond and the numerous varieties of chestnuts. In this connection there should be set out also the best of the persimmon and pawpaw.

Station No. 7, Centralia, C. H. Webster, Superintendent.

APPLES.

Dickenson—Had only a few specimens; resembles Ben Davis to some extent only a dark-red color. Sim, Ettis and Ozark, the last named fruited full, and all three varieties have the appearance of Ben Davis.

Wagoner—Bore a crop; drops bad; medium to large size; deep red in the sun; fresh and firm; sub-acid; a good variety to plant.

McMahan's White—Bore a light crop of fine white apples; large in size; acid; a good cooker; ripens middle of August.

Light Red—Bore a crop; fruit medium size; good quality; ripens with Jonathan, a good eating apple.

Salome—Picked one barrel from two small trees; fruit medium to large; roundish conical; yellowish white shade with pale, red strip; flesh, tender, juicy and mild; a good apple.

York Imperial—A scattering crop; medium to large; white, shaded with crimson in the sun; flesh firm, crisp and juicy; good keeper; one of the best winter apples.

Belle de Boscop—One tree from which two barrels were picked; fruit large, yellowish-green shaded with pale-red in the sun; flesh crisp, juicy and mild; a good keeper.

Indian—One tree had a bushel of fine apples; fruit large and well colored; resembled Rome Beauty some only more pointed; a valuable apple and a good keeper.

PEARS.

Lincoln—One tree had one pear on; resembled the Howell; good quality.

Swiss—Two trees had half bushel on; fruit medium size; shaped like the Howell; coarse grain; very poor quality; ripens same time as Ea. Harvest.

PEACHES.

Champion—A good crop of fine large peaches; sweet, rich and juicy; skin creamy white with red cheek; one of the best early peaches.

Lovett's White—A free stone only medium in size; white; late, ripens about the first of October.

Chair Choice—A full crop of fine large peaches; yellow; free stone; ripens last week in September; one of the best.

Crosby—A full crop; very small; yellow; free stone; good quality; would have to be thinned to make it of marketable size.

CHERRIES.

Ea. Richmond, Dyehouse and U. Motmorency—Had a light crop; other varieties had only a few scattering cherries.

PLUMS.

Burbank—Trees were well loaded with fine large plums; color cherry red with a heavy bloom; flesh yellow; very sweet; good flavor; the largest of plums and one of the best; ripens in August.

Abundance—Well loaded with fine fruit; large, oblong, tapering to a point; flesh orange yellow; sweet, rich, juicy and highly perfumed; skin a lemon yellow covered with bloom; ripens in August.

Satsuma—Fruit large, nearly round, slightly sutured on one side; surface dark-red under thick bloom; flesh a dark-red; small stone; ripens in August.

Ogan—Fruited full; large, round, deep suture; golden-yellow; sweet, rich and dry; free stone.

STATION NO. 8, ALTON, J. S. BROWNE, Superintendent.

PEARS.

Ansault—Tree a ragged grower; fruit greenish yellow specked with russet; medium to large size; not ripe yet.

Anne Ogerau—Very prolific quality; very best; large size; fruit greenish yellow; ripe October 15.

Mount Vernon—Fruit russet colored; flesh coarse grained and sweet; tree very vigorous.

Margaret—Ripens just before Tyson; of about the same size, appearance and quality.

Rutter—Fuit large size; quality best; very production; some blight, but not much.

Souvinir de Congress—Very large size; beautiful red cheek on light-yellow ground where the sun strike it; quality similar to Bartlett-Seckel; ripens at about the same time; has shown some blight, but not as much as Bartlett.

GRAPES.

Colerain—White; bunch large as Concord; berry above medium; ripens with Concord; hangs long on the vine.

Beeby Black—More productive than Moore's Early; bunch and berry not as large; ripens a little earlier; quality hardly as good.

Beacon Black—Bunch and berry as large and ripens at the same time as Concord.

Centennial—White; has not succeeded here.

Eaton Black—Bunch and berry very large; very productive; inclined to overbear; ripens a little later than Concord; quality free from foxiness, but not very sweet; possibly it would have been earlier and of better quality if the vine had not overborne.

Esther White—No good.

Ideal Red—Bunch and berry almost as large as Concord; quality as good as Delaware; ripens just after Moore's Early and before Concord; very productive; inclined to overbear; a very desirable red grape.

Dr. Warder—Black; early as Moore's Early; bunch and berry not as large; quality poor.

Winchell, or Green Motntain—White; bunch large; berry medium; quality fine; ripens with Moore's Early.

BLACKBERRIES.

Dallas—Large size; early; strong prolific grower.

Eldorado—When fully ripe a fine quality; medium size; only moderate yield.

Ford's No. 1—Large size; early; strong grower; prolific.

King—Very early; medium size; moderate grower; fairly prolific.

Piasa—Very early; very productive; ripens its whole crop inside of ten days; good grower and good shipper; medium to large in size.

Sanford—Very late; small and of no value.

GOOSEBERRIES.

Newell—Nothing to recommend it.

Puyallop—Very large size; very productive; free from mildew; good grower; a very desirable berry.

Red Jacket—Has always been a very poor yielder; berries small to medium; free from mildew.

Triumph—Large size; fairly productive; some mildew; bushes are thrown out by the frost more or less ever winter.

CURRANTS.

Frost and borers have used up Fay's and Ruby Lastle, leaving only Wilder, which grows well, bears well and thrives in spite of frost and insects; a good currant to plant.

STATION NO. 8 B., ALTON—E. A. RIEHL.

APPLES.

McMahon's White—Bore its second crop; a large white summer apple; a good early bearer; an excellent cooker; most too tart for desert; a valuable apple for home use or market.

Dyer—A yellow summer apple; drops badly and of no value.

Straintown—Yellow, said to be a winter apple in Pennsylvania; drops badly, but quite productive.

Lippincott—Rather small; second early; excellent quality, and valuable; quite productive.

Paragon—A large showy fruit and an early bearer, but so far has shown a strong dispositlon to drop.

Langford—This belongs to the Gilpin family; is a good bearer; of excellent quality.

Nero—This is an early bearer; fruit of good size and quality, but rots and drops badly.

Johnston—This is one of the Gilpin family; very profuse bearer so that the fruit is only medium to small, but of good quality and a good keeper; desirable for family use.

Kentucky Redstreak—Season early winter; very productive; a favorite eating apple in my family.

PEARS.

Columbia—First sent out under the name of Bartlett-Seakel; bore on several trees but two years planted; fruit large and attractive; flesh coarse and of only second rate quality.

Rutter—An early and profuse bearer, must be thinned or the tree cannot properly mature what it sets and is then not of good quality, but when thinned it is of excellent quality, and is one of the latest we have; season, end of November.

Anne Ogereau—Bore a few specimens; large and handsome but of poor quality.

PEACHES.

Sneed—One of the very earliest to ripen; being of the Chinese type; does not rot so bad as the Amsden-Alexander type; may be valuable to plant in a limited way in certain localities.

Minnie—Again bore full; one of the most satisfactory early peaches we have, that can safely be recommended for home use or market.

Lovetts White—A good late; free; much like Heath free.

GRAPES.

Lindherbe—Red; bunch and berry small; quality very good; weak foliage; not desirable.

Oriole—Black; bunch medium; berry small; quality excellent; does not set well.

Margurite—Black; small in bunch and berry; not desirable.

Raisin—Black; berry small; bunch medium; quality fair; very productive; not desirable.

W. B. Munson—Black; berry medium; bunch small; quality excellent.

Winita—Black; berry small; bunch medium; quality very good; may be valuable on account of lateness and for wine.

Perry—Black; bunch and berry below medium; bunches not well filled; quality very good; may be valuable on account of lateness and for wine.

Admirable—Black; berry small; bunch below medium; pulpy; wilts; not desirable.

Hero—Black; bunch large; berry very large; foliage healthy; moderate growth apt to overbear; quality much like Concord of which it is a part.

Aminia—Black; bunch above medium; berry large; early; quality excellent.

Winchell—(Green mountain) white; early; bunch large; berry below medium; quality excellent; desirable for home use.

Moyer—Red; bunch and berry small; quality very good; a good early amatuer grape.

Fern—Black; one of the best of Munson's seedlings; a good grower; productive; bunch and berry medium; quality very good.

Early Wine—Black; bunch small; berry below medium; productive; a rampant grower, holding its glossy foliage until after frost, hense the very best arbor grape that I know of.

RASPBERRY.

Marion's Favorite--Red; good grower; productive; medium size; rather dark in color; only second rate in quality.

Black Hills—Red; medium size; moderately productive; quality only fair.

First and Best—Red; very good quality; not hardy.

Kenyon—Red; very productive; large; dark; poor quality.

Louden—Red; strong, vigorous plants; not making many suckers; good quality; firm and fairly productive.

Miller—This very much resembles the old Brandywine; hardly good enough in quality.

Superlative—Red; belongs to the Antwerp family; a large berry of fine form and excellent quality, but is not hardy.

Onondaga—Black; mid-season; medium in size; productive; very good in quality.

Smith's Prolific—Black; early; productive; resembling Tyler but larger.

Ferndall—Black; mid-season; very much like Gregg.

Lawrence—Black; mid-season; large; very productive; promising.

Columbian—Purple; a very strong grower, and exceedingly productive; plants one year after planting having yielded a quart at a picking; similar to Schaffer but more hardy and not so apt to crumble.

BLACKBERRIES.

Allen—Very early, but so similar to Egyptian that I can see no difference.

Prizé—(Ford's No. 41.) A strong grower; large and of good quality.

Early King—Quite productive but not as desirable as some others.

Piasa—Ripens after Egyptian but before Snyder; moderate grower; berry of large size; best quality; a good shipper and keeper; ripens its whole crop in about ten days.

DEWBERRIES.

Austin—This comes from Texas but is perfectly hardy; has the strongest foliage and vine of any dewberry I know; fruit large, but of rather poor quality; fairly productive.

Early Mammoth—Fair grower; fair size and immensely productive; plants one year old giving a quart of ripe fruit at a picking; quality only second rate.

Loganberry—This is a true hybrid between the blackberry and red raspberry, which is shown by its growth of plant and fruit. The fruit is shaped like a blackberry, bright red in color, having a distinct red raspberry flavor, but quite acid; while a great novelty, I can not see that it will fill any place not already filled better by some other fruit. The fruit never gets fit to eat in the fresh state, but might be good canned or stewed.

Raspberry, *Blackberry* and the Mayberry have no value being tender, bearing no fruit and suckering worse than any other plant with which I have any acquaintance.

STRAWBERRIES.

Meek's Early—Small; dark red; only moderately productive; very early.

Staples—Very early; dark; small; productive; firm; good flavor.

Beder Wood—Very early; fair size; very productive; soft; not of high quality; good for family and near market.

Epping—Light in color; soft; fair quality; moderately productive.

Annie Laurie—Small plant; excellent quality; not productive.

Brunette—Fairly productive; medium size; regular; good quality; rusts.

Lehigh—Fairly productive; medium size; good quality; soft.

Commander—Large; fair shape; firm; good quality; not productive; rusts.

Yale—Unproductive and rusts worse than any other in the collection.

Mele—Fair size at first, dwindles as the season progresses; very productive; soft; acid; poor quality.

Walton—Greatly resembling Miner; not desirable.

Lady Thompson—Good size; regular; moderately productive; fairly firm and in good quality; while a fairly good berry we have better.

Bouncer—Dark red; firm; medium size; not productive.

Arrow—Small; soft; sour; unproductive.

Cyclone—Unproductive; small, and of poor quality.

Banquet—Small plant and berry; firm; high quality; unproductive.

Paris King—Fair size; quite productive; soft; poor quality.

Glen Mary—Large; productive; good shape; dark color; poor quality.

Gandy Belle—Good size at first, but runs down in size; quite productive; very dark; firm; poor quality.

Sunrise—Light colored; soft; unproductive.

Clyde—Large; regular; moderately firm; exceedingly productive; fairly good quality; one of the best of recent introduction.

Satisfaction—Medium size, running down small toward the end; fairly firm.

Robinson—Rough; small; soft.

Mary—Small plant; dark; very firm; fairly productive, running down in size.

Sparta—Small; dark; unproductive.

Marshall—Largest size; bright dark color; productive; good quality; a strong vigorous plant; one of the best.

Stranger—Similar to Sharpless, but not the same, and more productive.

Weston—Small; soft; poor.

No. 1,000—Small; light colored plant; fruit large; very dark; firm; not productive.

Ideal—Small; very dark; not productive; sour.

Wm. Belt—Large; very rough and coxcombed; fairly productive; rather late; quality fair.

Isabella—Fair size; good shape; quite productive; promising.

Oriole—Small plant; dark; firm; fair size; soon runs down in size.

Enormous—Fair size, becoming smaller towards the end; fairly productive; good color; fair quality.

Ivanhoe—Under size; dark; firm; high flavor; not productive.

Sunnyside—Small plant; fair size, becoming small toward end of season; soft; sour.

Belle—Small plant; good size long glossy berry; firm; fairly productive.

Orange County—Fair size; moderately productive; light colored; not desirable.

Brandywine—Large at first, soon getting small; very regular; firm; good quality; late; only moderately productive.

Ruby—Midseason to late; of large size which it carries to the end of the season better than any other; moderately firm; has proven itself to be a good shipper and keeper; in quality unsurpassed; very productive; strong, vigorous plant; the most promising of recent introductions.

EXPERIMENT STATION NO. 9, COBDEN—T. E. GOODRICH, Superintendent.

CHERRIES.

JUNE 1, 1897.

Dyehouse—Bore a moderate crop, when cherries were nearly an entire failure; medium size; sour variety; tree good grower; of spreading habit; fruit good quality, good keeper and apparently a good shipper; fruit and tree much resemble Early Richmond.

STRAWBERRIES.

MAY 25 TO JUNE 2, 1897.

Wolverton—Good size; prolific and fine quality; long fruit stems; hardy plants; good grower; staminate; conical in shape.

RASPBERRIES.

JUNE 7, 1897.

Pride—Red rapsberry; early, fair size, bright red color; good quality, but not heavy croper.

Egyptian—Black raspberry; early; good croper; fair size; quality of the best.

Thompson's Prolific—Red; medium to large; early; fine quality.

Palmer—Black raspberry; good size, prolific, good quality, but rather tart.

JUNE 13, 1897.

Ostheimer (cherry)—Dwarf; good bearer; fruit medium size; bright red, good quality, with cherry flavor; rather small for market.

MULBERRY.

JULY 1, 1897.

Victoria—Good grower, annual and heavy bearer; fruit of very fine quality.

PLUM.

JULY 15, 1897.

Abundance—Rich golden color; yellow flesh; good size; sweet and rich; good grower; subject to rot, although not so much so as some other sorts; tree very vigorous.

BLACKBERRIES.

JULY 10, 1897.

Spaulding—Poor cropper; would discard.

JULY 15 TO 21, 1897.

Prize—Only medium size; would discard.

Omer—Medium to large; good quality.

Piasa—Although five years planted, bore more heavily than ever; medium size, good quality and healthy; later than Harvest.

APPLES.

JULY 21, 1897.

Lexington (?) *Crabapple*—Yellow, covered with bright red; flat and round; sour; very handsome; tree prolific and early bearer.

AUGUST 13, 1897.

Borsdorfer—Tree dwarfish; fruit conical; very showy; red, yellow splashed and covered with beautiful dots.

OCTOBER 1, 1897.

Jackson—Medium size, dull red, covered with dots like Baldwin, which it much resembles in texture and quality, but much sweeter; shape very flat, with deep stem cavity; blossom end protruding; short, slender stem; flesh white; quality extra good.

PEACHES.

AUGUST 3, 1897.

Piasa—Fine, large and handsome; lucious quality; vigorous grower; worthy of general planting.

Prize—Tree medium grower; fruit medium size; yellow, beautifull red cheek; free stone; best quality.

AUGUST 13, 1897.

Cabin—Medium size; white, covered with red; a little too small for market.

June Rose—Good size; white; free; good quality; vigorous and prolific.

Mrs. Brett—Good size; white; good quality.

Requett Cling—Good size; white; good quality.

Beers' Malucatoon—Yellow; showy; first quality, but sour; free.

Reeves' Golden—Large yellow; very showy; best quality; tree vigorous and productive.

Lock's Cling—Medium size; vigorous grower; very prolific; do not recommend.

AUGUST 16, 1897.

Crosby—Small to medium; yellow flesh; dull red; not attractive; very woolly; fruit nearly round and without point; strong tendency to overbear, and unless thinned will be too small for market; quality best, fruit small; tree vigorous, but not as hardy in bud as advertised.

AUGUST 19, 1897.

Hollister—Large; white and red; very handsome; very juicy; sweet; quality best; free; tree vigorous.

Chairs Choice—Good size to large; yellow; free; good grower and bearer; quality best.

AUGUST 30, 1897.

Roser—Medium size; white, with dark, cloudy patches and spots; quality poor; would discard.

Halliday Cling—White, covered with red; good quality.

Gudgeons Late—White; medium to a small above; tree vigorous; free; poor quality; would discard. Loon's Mamouth Cling and Cooper's late very similar; not good size, quality or color; would discard both.

Lovett's White—Medium size; white, with beautiful red cheek; free; good quality and very heavy bearer.

SEPTEMBER 2, 1897.

Wonderful—Medium to good size; yellow, covered with red; very handsome; deep sunken stem, very prominent ridge lengthwise, at the base of which is a crease, with a red stripe, when fully ripe; free, with dark pit smothered with red; fair quality.

PEARS.

AUGUST 13, 1897.

Mongolian Snow—Moderate size; russet; vigorous grower; good quality, but too young to tell of its bearing qualities; good shape, and so far free from blight.

AUGUST 19, 1897.

Lincoln—Trees from Augustine, Normal, Ill., and Phœnix, Bloomington, Ill.; fruit medium size; yellow; quality same as Bartlett and equally as good; tree a rapid, somewhat straggling grower, and so far free from blight.

SEPTEMBER 2, 1897.

Brockworth—Good size; green and yellow, slight blush; sprinkled with minute dots much resembling Howell; short, thick stem sticking out to one side; quality best and very sweet; tree vigorous and strong grower, but died of blight the fourth year after planting.

SEPTEMBER 6 TO 20, 1897.

Duhammel Du Monceau—Medium size; russet; nearly round; stem irregular and one sided; flesh white; good quality.

SEPTEMBER 6, 1897.

Josephine De Malaines—Irregular shape; small; ribbed; large, long and crooked stem; white flesh; good quality, but too small for market.

QUINCES.

OCTOBER 25, 1897.

Champion—Round and pear shaped; medium to large; yellow flesh; good quality.

Rhea's Mamouth—Medium size, but good quality.

Pear—Large size; pear shaped; good quality.

Meeches Prolific—Small to large; nearly round; quality exactly the same in all the varieties.

Trees, vines and plants planted in Stations of the Southern District during 1897:

STATION NO. 8, ALTON.—J. S. BROWNE, Superintendent.

CURRANTS.

Pomona.
Connells.
Black Champion.

GOOSEBERRIES.

Keepsake.
Edward Sefort.
Columbus.
Souvenir de Billard.

RASPBERRIES.

Babbit Creek.
Conrath.
Phœnix.
Centennial.
Lotta.
Salmonberry.

STRAWBERRIES.

Avery.
Beverly.
Bismarck.
Berlin.
Clark.
Currie.
Cobden Queen.
Dollar.
Eureka.
Enormous.
Erie.
Eleanor.
Edith.
Evans.
Equinox.
Earliest.
Fountain.
Far West.
Gandy Belle.
Glen Mary.
Giant.
Gertrude.
Gardner.
Gross Lombard.
Howell.
Hersey.
Holland.
Ideal.
Jerry Rusk.
Kansas Prolific.
Marshall.
Mexican.
Michigan.
Maytrot.
McKinley.
Magoon Murry.
Noble.
Oriole.
Owego.
Plow City.
Ponderosa.
Pet.
Pride of Cumberland.
Royal Sovereign.
Ridgeway.
Rose Seaford.
Starr.
Satisfaction.
Tennyson.
Weston.
Brunette.
Belle.
Benoy.

Station No. 8 B., Alton.—E. A. Riehl, Superintendent.

APPLES.

Austin Sweet.
Bk. Ben Davis.
Briers Sweet.
Bears Sweet.
Coffman.
Delicious.
Hyatt.
Ishmaelite.
Krauser.
Nixonite.
Austin Sweet.
Paul.
Platt.
Red Paradise.
Shannon Improved.
Schaeffer's.
Sweet Jonathan.
Starr.
Thompson.
Wasser.
Delicious.
Platt.

PEARS.

Conference.
Durand.
Dr. Hogg.
Eastern Belle.
Fuller.
Fame.
Goodale.
Jones.
Keepsake.
Mary.
Marie Louise.
Magnatt.

PEACH.

Greensboro.
Triumph.
Lewis.
Miller's Cling.

CHERRY.

Magoun.
Compass.
Stanton.

QUINCE.

Winter Sweet.

CHESTNUT.

Alpha.
Advance.
Beta.
Superb.

WALNUT.

Mayette.
Kagazii.

GRAPES.

Campbell.
Delago.
Leader.
Owosso.
Pulliat.
Bresley.
Nectar.

CURRANTS.

Crunnell's.
Pomona.

RASPBERRY.

Babbit.
Creek.
Centennial.

BLACKBERRY.

Egyptian.

STRAWBERRIES.

Bullnose.
Beverly.
Berlin.
Bismarck.
Cobden Queen.
Carrie.
Fertilizer.
Maytrot.
McKinley.
Monster.
Madeline.
Margaret.
Olean City.
Seaford.
Splendid.
(80 varieties.)

STATION NO. 9, COBDEN.—T. E. GOODRICH, Superintendent.

PEARS.

Conference.
Dr. Hogg.
Eastern Belle.
Keepsake.
Marie Louise.
Magnate.

PEACH.

Boyd's Early.
Bishop's Early.
Dr. Berckman's.
Belle of Georgia.
Connet's Early.
Crunnell's Late.
Darby.
Delaware.
Eldred.
Emma.
Gilman's Favorite.
Grand Reporter.
Japan Dwarf Blood.
Lorentz.
Sturdy.
Scriggs.

PLUM.

Hale.
Normand.
Nimon.

CHESTNUTS.

Alpha.
Advance.
Beta.
Success.
Paragon.
Green's.

Station No. 11, Olney.—C. S. Mace, Superintendent.

AHPLEs.

Brier's Sweet.
Bauman.
Doctor.
Early White Sweet.
Garr's Seedling.
Gulby.
Hawke's Rusty Coat.
Ivanhoe.
P. W. Sweet.
Price's Sweet.
Pride of Texas.
Park Spice.
Legal Tender.
Commerce.
Black Ben Davis.
Paul.
Platt.
Starr.
Delicious.
Challenger.
Headlight.
Sweet Jonathan.
Hiatt.
Wagner Improved.
Shannon Improved.
Oliver Red.
Loy.
Kera's Greening.
Walter Pease.
Sweet Alice,
Richardson.
Sutton Beauty.

PEARS.

Conference.
Magnate.
Angel.
(36 varieties.)

Station No. 15, Villa Ridge.—E. J. Ayers, Superintendent.

GRAPES.

American.
Alice.
Big Hope.
Beacon.
Brilliant.
Barry.
Belle.
Lindherbe.
Laussel.
Leader.
Margurite.
Moyer.
Moore's Deamond.
Nectar.

Big Extra.
Campbell.
Carman.
Delago.
Delaware Seedling.
Eaton.
Elvicand.
Fern Munson.
Gold Coin.
Goldstein's Early.
Green Monntain.
Great Cluster
Hopkins.
Jaeger.
Onderdonk.
Pulliatt.
Presley Rommel.
Raisin.
Rochester.
Riehl's No. 10.
Riehl's No. 11.
Riehl's No. 12.
Riehl's No. 15.
Triumph.
W. B. Munson.
Wyoming.
(45 varieties.

THE FARM GARDEN.

L. H. Calloway, Bethel.

[Note.—The copy for this paper, read before the State Society, came too late for insertion in the proper place in the proceedings.]

Does it pay to grow vegetables to sell? Probably it does not pay. However, it should lessen the consumption of meat and vegetables to the value of $100 per annum.

Too much meat is consumed, and of that too great a portion is pork.

Four neighbors should form a meat club. At intervals of three weeks from April 1st to September 15th a fat lamb or sheep should be butchered, each member receiving a quarter. Each member in rotation should furnish, butcher and deliver a sheep. Until used this fresh meat may be kept without salt in a refrigerator, or lacking this, it can be kept for a week by enclosing in a clean sack and suspending almost to the water in a deep shaded well.

On or about each of the dates October 1st, November 15th, January 1st, and February 15th a member of the club should furnish and butcher four fat hogs.

He should keep the lard, shoulders, sides and hams for his own use; but he should divide equally between the other members and himself the head-cheese, sausage, back-bones and spare-ribs. Each member should take his turn in rotation to furnish and kill the hogs. Because of the danger of trying to cure pork before cold weather, the member having the light hogs should kill first.

On or about each of the dates October 15th, December 1st, January 15th and March 1st a member of the club should furnish and butcher a fat beef, aged 1½ or 2 years. He should deliver a quarter of the beef to each member and keep a quarter for himself. Each member should take hi

turn in rotation to furnish, butcher and deliver a beef. A portion of the beef butchered March 1st can be kept for awhile in a pickle, consisting of the following ingredients in the following proportions:

For each two gallons of water take two pounds of salt, one ounce salt petre, one pound brown sugar and two large tablespoonfuls of soda. Mix, boil and skim.

The garden should not be a square lot of ground that cannot be worked by horse power. It will cost more to work it entirely by hand power than its products are worth. The fence required to protect it from the poultry is a useless expenditure of money. The garden should be in the corner of the field adjacent to the house and should be long and narrow. No fence will be needed. The labor of hauling manure, breaking the ground and most of the cultivation can be done by horse power.

Such things as peas, beans, beets, corn, tomatoes, cabbage, etc., should be planted in rows on one side of the garden, the rows being wide enough apart to admit of horse cultivation.

The onions, lettuce, parsnips, radishes and spinage and other small vegetables requiring hand culture, should be placed on the other side of the garden. If the rows are so long that one of them has too large a quantity of one vegtable, the row should be completed with another variety, or with other vegetables. Time is too precious to waste sticking peas and beans. The bush varieties which require no sticking should be used. About April 1st plant shallow a very early variety of sweet corn, like Cory. At the same time plant some large sweet variety, like Stowell's Evergreen. At succeeding intervals of two weeks until July 15th, make plantings of the large sweet variety. This ought to give roasting ears from July 1st until frost.

It is profitable and by the scientific use of insecticides the farmer may grow a few hills of melons and squashes. But being a very busy man he is apt to fail to apply the insecticides at just the right time. It is better to plant several long rows in his young orchard and give clean culture by horse power as long as the vines will permit. When the vines entirely cover it in the hot dry weather, the trees will be greatly benefited. The crop ought to be so abundant that its owner may select the choicest for his family and to give to kind neighbors and have a large surplus to feed to his live stock.

An acre of Kaffir corn should be grown. The horses and cattle like the fodder. The latter is also useful for the walls and roof of a temporary shelter for live stock or for poultry. The seed is excellent poultry food.

The "table syrup" of commerce is glucose, colored, flavored and sweetened more or less, according to grade. It has received various names such as "Table Syrup," "Silver Drips," "Honey Dew," "California Nectar," etc.

If the farmer has an acre of thin clayey soil within two miles of a surghum mill and evaporator he would better grow sorghum. The molasses is sweet, wholesome, good. The seed is good for poultry and live stock. The leaves are excellent for horses. The bagasse is good for mulch and for covering stock sheds.

The seeds of winter spinage, seed onions and lettuce may be sown about September 10th, and the young plants may be covered with mulch when freezing weather begins. The mulch should be removed early in the spring and an early crop of these vegetables ought to follow.

A portion of the parsnips and salsify may remain where grown until wanted. A portion may be lifted and with carrots, beets, turnips and winter radishes be layered with sand in the cellar for winter use. The cabbage should be covered with dirt.

Enough of the sweet corn for use from October 1st until July 1st should be dried with the cook stove evaporater or other evaporator. No acids or cans are used and there is no injury by freezing.

The commercial strawberry jam, raspberry jam and blackberry jam are glucose coagulated with sulphuric acid, and colored with dyes. The seeds in "strawberry jam" are old spent timothy seed and in raspberry and blackberry jam the seeds are old spent clover seed.

The commercial jellies contain the same ingredients except timothy seed and clover seed. Hence the farmer's family should put up their own jams and jellies from berries. The commercial fruit syrups are also artificial products. The farmer's family should put up several gallons of grape syrup, strawberry syrup and blackberry syrup. When drank it should be diluted with water and sweetened. It is cooling, refreshing, strengthening, better than lemonade, sodawater or root beer. Grapes layered in white sugar are good for winter use.

Ripe persimmons layered in white sugar are also good for winter use.

Honey is wholesome, strengthening, purifying, healing and nourshing. I have reference to the kind made by bees—not the glucose kind.

Persons suffering from rheumatism, nervous diseases and nervous dyspepsia should eat celery and turnips.

Onions are almost the best nervine known; will quickly relieve and tone up a worn out system and are beneficial in cases of coughs, colds, influenza, scurvy and liver complaints.

Lettuce eaten by those who suffer from insomnia is beneficial.

Let those who need iron for a tonic eat spinach and let the drug (iron) alone. Persons suffering from gravel should eat onions and spinach. Carrots should be eaten by persons who have asthma. Let those who need increased perspiration to relieve over-worked kidneys and lungs eat asparagus. Raw beef is proper diet for persons who have consumption and eggs for those who have jaundice. Cranberries are proper diet for those suffering from erysipelas. They should also be applied externally. Lemons satisfy and cool the thirst in fever. Blackberries are a tonic. Blackberry cordial is the proper remedy for diarrhoea. Persons who are billious, who have indigestion and dyspepsia, conditions for which calomel is usually prescribed, should let the calomel alone and eat freely of ripe tomatoes. Let those who have rheumatism and need an aperient, eat pieplant. The apple, excelling other fruits in phosphoric acid is an excellent brain food. It is aperient and diuretic and hence obviates indigestion and dyspepsia, and assists kidney secretions and prevents gravel. It cleans the mouth. Let persons who use drugs classed as aperients and laxatives and cathartics, stop their use and eat freely of apples, figs, bananas, pieplant, tomatoes, onions, strawberries, raspberries and blackberries.

While cultivating this garden the farmer should see object lessons in botany, chemistry, entomology and the change of seasons for mind culture. When the harvest is plenteous let him cultivate the love and friendship of his neighbor by giving him some of the vegetables and fruits. Let the planting of the seed and the setting of the bud and the graft be a type of death; the dormant period a symbol of the awaiting of the reserrection and the developement of the seed, bud or graft, an evidence of the great day when mortality shall put on immortality.

REPORT OF DELEGATE TO WISCONSIN.

FRANK D. VORIS, Neoga.

Mr. President and Members of the Illinois State Horticultural Society:

I, your delegate to the Wisconsin State Horticultural Meeting, held at Madison February 1, 2, 3 and 4, 1898, would make the following brief report of same. Arriving at Madison at 12:45 P. M., found the delegates making their headquarters at the Capitol House. We got our dinners and started at once for the capitol building. The meeting was held in the senate chamber and was called to order at 1:30 by President L. G. Kellogg.

Credentials of delegates from different states were read and, on motion, the delegates were made honorary members. First was reports on trial orchards and experiment stations. They recommend that, to be sure of success, to plant apples of none but well known, hardy northern varieties, their experiments with the same having been very satisfactory, while with others not so.

They supplement their experiment station reports with reports from every locality throughout the state where there is a local horticultural society. Almost every town and county has a good, live society. The local society meets as often as four times a year and meet frequently with the different individual members, have a program, following by good things to eat, and have a profitable, social and general good time, which serves to hold them together and tends to make them zealous and enthusiastic in the cause. Their local societies as well as their state society have a good membership of ladies, which is as it should be. For how can we expect to have these meetings attractive without our mothers, wives, sisters, cousins and aunts being with us to push the good work along.

The society supports a monthly paper and publishes same, viz: "The Wisconsin Horticulturist," which is a live, earnest, spirited, newsy exponent of horticulture, filled full of good things, and edited by Mrs. Franklin Johnson of Baraboo, Wis., and is doing much good in the interest of horticulture.

Found the fruit display very credible for any state, in fact more than I expected. Among the apples there was the Grimes' Golden, North-Western Greening, Duchess, Yellow Transparent, Wolf River and others too numerous to mention. Among the potatoes there was almost every good variety for market and a large and fine display of new va-

rieties of seedlings, altogether making the finest display of potatoes I ever saw. From the plates entered, would say that the Wisconsin farmers should cultivate more acres of potatoes than they have in years past. Their climate and soil being so favorable to the potato. The majority of the states south of them are not making a success with the culture of same, will have to turn their attention to some other crop and buy their potatoes from their northern sister states bordering on the great lakes. Northern potatoes not only have the southern sister states for a market but the whole world. In the future, as in the past, think we will have to depend on them for our late potatoes and they on us for peaches, pears and winter apples.

In small fruits, Wisconsin and our state will not come in competition; the difference in latitude being enough to enable the Illinois dealer to work his small fruits all off before the Wisconsin crop is ready for market.

Prof. King, of the University of Wisconsin, delivered an address on rehabilitating and regrowth of new forests in the place of the old ones, cut by the lumberman's ax. He offered a strong plea for a law to protect same against fire and, if necessary, remit taxes to encourage owners to hold and re-timber same. He deplored the day when these old forests would become nude of timber from lack of proper legislation and attention when it can be so easily done.

Prof. Gettle, of Madison, delivered an address on the asthetic and ethical value of trees which was replete with good thoughts and highly appreciated by his hearers.

Mr. Wm. Tool, of Baraboo, read a paper strongly advocating the teaching of horticulture in their public schools which brought forth quite a discussion, which settled down to whether it would not be of doubtful success in all grades below the high school, but strongly recommended that it be taught in the high school, especially in township high schools, and that Prof. Goff, of the State University, would get out a text book in that line suitable for high school work.

Prof. Baley, of New York, delivered an interesting address on agriculture in comparison with manufacturing and transportation. He said agriculture had not kept pace with either manufacturing or transportation and urged the farmers to post up, use new helps, new theories and new appliances and more intelligently do their work, and in order to do this horticulture should be taught in all our high schools and that agriculture and horticulture should be brought to the front as a calling.

Mr. Hoxie, chairman of the committee on Trans-Mississippi Exposition, recommended that the association make an exhibit there, and on motion the recommendation was adopted.

President L. G. Kellogg delivered his annual address, stating that the fruit growers had met with only moderate success, having had late frosts and drouth, but with all it was cheerful and hopeful for the future.

Secretary and treasurer's reports were made showing a good live state of their affairs and sufficient cash for all legitimate prospective demands, unless it be for their exhibit at Omaha, for which they will ask the state for an appropriation.

Prof. Bailey again addressed us on the condition most favorable for fruit buds. He said that summer pruning tended to fruit buds or fruit growing while winter pruning to wood growth. He advised trimming but little, only enough to cut out cross limbs and water sprouts; would trim yearly and not spasmodically, two or three years apart. A tree might be induced to bear fruit yearly by removing half the fruit buds and letting it bear but half a crop each year, but after all not more practical than to let nature take its course about that and let them bear alternate years, and said not try to trim your trees to look all alike, but let each one have its peculiarity, taking off only what you have to; he did not think it advisable to use any artificial means to make an ordinarily healthy tree fruit, but if they would not fruit they might be girdled or notched successfully.

In conclusion, I cannot speak to highly of the Wisconsin State Horticultural Society. It is composed of men wonderfully in earnest and is occupying advanced ground in the cause of horticulture and we can expect nothing but good and intelligent work from them.

They have my heartfelt thanks and best wishes for favors shown while with them.

A. R. WHITNEY.

The subject of this memorial was one of the early settlers of Northern Illinois. He was the only son and youngest child of Col. Nathan Whitney; was born in Orleans County, N. Y., in 1824; came with the family to Lee County, Illinois, in 1838; settled near Franklin Grove, where he resided at the time of his death, Jan. 15, 1898.

In 1843 Mr. Whitney began planting with a view of establishing a nursery. His large planting of orchards and shelter belts has made his place a land-mark in that region. For many years he was an extensive manufacturer of cider and cider vinegar, which was noted for its purity and excellent quality. The well-known Whitney crab originated on his grounds.

At a very early day he was closely identified with the horticultural interests of this state. He attended the first meetings of the Northwestern Fruit Growers' Association and acted as its treasurer for several years. Was one of the leading parties in the organization of the Horticultural Society of Northern Illinois, and has always been one of its most active and efficient supporters.

He was one of the charter members of the National Nurserymen's Association and served as its treasurer for many years. Being a man of much energy and executive ability he became one of the prominent horticulturists of this portion of the state. Although he never took a very active part in the deliberations of our society he was a close and accurate observer and would often, by some question or terse remark, demolish a mountain of theory.

Notwithstanding his busy life, he found time for public affairs, holding various offices in his town. He was an ardent republican, and prominently identified with the Masonic fraternity. Was a kind husband, good father, and a genial, faithful friend.

In his death Illinois has lost one of its most efficient and active horticulturists.

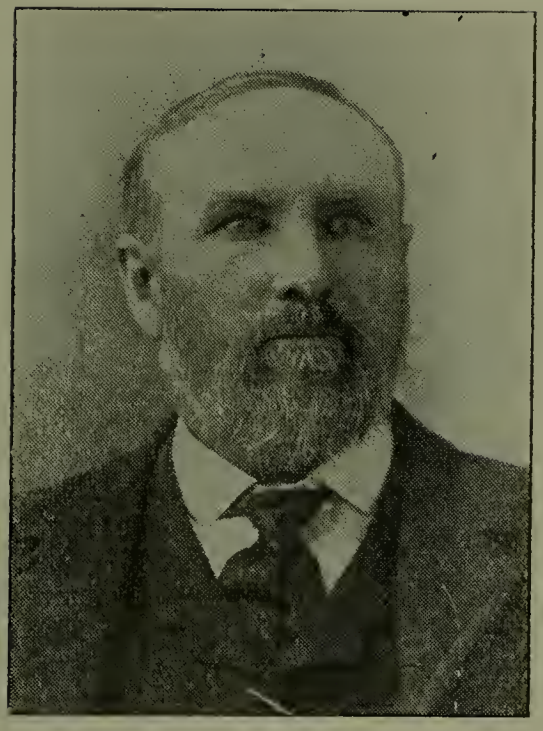
JAMES T. McSPADDEN.

James T. McSpadden departed this life July 2d, 1897. The following is taken from the Neoga News:

"Was born in Monroe County, Tenn., Jan. 22d, 1840, and was brought up on a farm and acquired a strong constitution. On December 27th, 1862, he was married to Angeline Ewing. The wife and mother died March 26th, 1877, leaving two girls, who still survive: the oldest, also a girl, died at 5 years old. He was again married February 13th, 1879, to Sarah E. Edwards, of Monroe County, Tenn. Three children were born to this union, all boys, the oldest dying at 7 years old, the other two still surviving. He removed to Neoga township in 1864, and has been a citizen of the town and township ever since. Bought the farm where he resided at his death in July, 1879, moved to it the following February and engaged in the nursery and the fruit growing business on a small scale. He had about 1,700 apple trees in orchard, besides several acres in peach, pear, cherry and plum trees. Also about five acres in small fruits. Any one viewing his farm can see what a few years of hard work and patient enterprise will do. Mr. McSpadden was brought up a Presbyterian and joined the church here soon after his arrival, on a letter brought from Tennessee. Politically he was a republican, but had no quarrel with the members of any other party. He was twice elected to the county legislature and represented Neoga township to the satisfaction of his constituents. In religion and politics as in his business he was thoroughly reliable, and every one that knew him knew which side he was on. While thus severely strict as to himself, he was broad in his liberality toward others and is the enbodiment of that sentiment of Lincoln, "malice toward none, charity for all." He was a pleasant conversationalist and an hour's chat with him was to the mind what the sunshine is to the body.

"But he is gone. The candle which a few hours ago burned here is not gone out, but is merely transferred to yonder world of glory, where it shall ever burn undimmed as one more beacon light to keep us off the rocks.

"Farewell, husband and father: farewell, brother, neighbor, friend. Your place on earth is left vacant, but your place in heaven is filled."



JAS. T. McSPADDEN.

JAMES BENEDICT SPAULDING.

Born at Marlborough, Massachusetts, October 19th, 1824; died from a stroke of paralysis at his home, Spaulding, Illinois, November 10th, 1897, aged 73 years.

Coming to Illinois in 1857 he has since given his life work to horticultural pursuits, never tiring of them. Nothing did he enjoy more than visiting with old horticultural friends. A lover of trees, home grounds and landscape, he often walked among and listened to the wind among the branches of the tall evergreens in his front yard. When the orchards were white with bloom, or when the trees were red with fruit, he never tired of driving beneath them: or in June he never tired of viewing the green fields of grain, and in August the golden harvest fields. Though his enjoyment partook of a quiet nature, none can portray his constant pleasure while surrounded by these peaceful rural scenes of spring and autumn.

Death summoned him with creeping paralysis while directing and showing his men, with his usual energy, how to do some work in the field. Without telling his family or any one he succeeded in getting to his buggy, to the house and his couch, and after resting a short time he again attempted to return to the field, and only after much persuasion did he give it up. He was conscious for three days and died five days after the stroke. His family and friends often suggested that he should take greater rest, but his cheerful maxim was, "It is better to wear out than to rust out."

Like many another New England boy along in 1830 to 1840, he was not favored with much schooling. He was a "self-educated" man, and it was often remarked by his acquaintances that "Mr. Spaulding was a wonderfully well-posted man on many subjects of the day and on subjects of his day."

A busy life. At the age of 22 years he was engaged in the operations of logging and milling lumber, also buying and shipping lumber by canal from Western New York to Albany and surrounding towns. In the fall of 1857 he came to Springfield and established the nursery business which bears his name. He always spoke with much feeling of those who befriended him in early days in Illinois. Such friends were Jacob Bunn, Elijah Iles and other genuine men prominent in Central Illinois in the 50's and 60's. Abraham Lincoln once showed him a kindness. Being himself kind at heart, he had many friends—some he had helped as would a father or brother.

A man of strong character, a capable business man. After coming to Illinois he soon put himself at the head of a large business, and for forty years carried on one of the largest nurseries and orchards in the United States. A nurseryman of national reputation, "the result of earnest, industrious effort, and of a thorough knowledge of an intricate and scientific business."

On June 1st, 1848, he was united in marriage with Mary C. Smith. She died May 13th, 1852, leaving two sons, Louis H. Spaulding and Milton E. Spaulding. On September 20th, 1854, was married to Cynthia A. Ewing, of Rochester, N. Y., who still survives him. Four children were born to this marriage—Frank E. Spaulding, Albert S. Spaulding, Mrs. Cynthia E. Fisher (wife of Frank R. Fisher) and Irving E. Spaulding.

A. R. WHITNEY. J. B. SPAULDING. ROB'T DOUGLAS.

ROBERT DOUGLASS,

The apostle of tree planting in the west. He was the most successful, thoroughgoing and eminent of evergreen growers and tree planters of not only the west but of the whole country. He raised for many years evergreens by scores of millions yearly, which were sent not only from Maine to the Pacific Ocean, but even to the most remote parts of Europe and other countries, and his seedlings of many and exquisite varieties, especially of Arborvitæ, were very numerous. His botanical knowledge was comprehensive, and he was an authority in this branch of science. He was a lover of every tree, plant and flower, a nurseryman of wide experience and exactness, so that if known that plants came from Robert Douglass it was taken for granted that they were true to name. His honesty and uprightness of dealing was known and unquestioned wherever civilization and the buying and selling of trees was known. He was indeed like his great prototype of Scotland, "The Douglass, tender and true." He will live forever, for are not his seedling evergreens, now grown, many of them giants in their green age, growing over all the civilized earth? What magnificent living monuments to the memory of one man! Has the earth ever before seen such? Mahomet is recorded as saying that "Whoso planteth a tree watereth the earth." What a benefactor then the man who was the means of having caused innumerable groves and forests to spring up all over these United States he loved so well. The monument of "The Douglass" will last when the Pyramids have perhaps crumbled, for he sent out many of the giant segnoia of California, of whom the American Horticultural poet said:

"They were green when in the rushes lay and moaned the Hebrew child."

* * * * * *

"In their tops the crows were calling when the streets of Rome were grass."

* * * * * *

"Green when Panic Hosts at Cannae bound their gory sheaves
And the grain and mangled Romans lay about like autumn leaves."

What a galaxy of great horticultural minds was he contemporary with! Wilder, Warder, Bryant, Barry, Downing, Shepherd, Hull and others who like him have gone home. But few of the tree lovers and tree planters of the earlier part of the century are left. Those living mourn the Douglass dead, dying in harness, like Eli, well stricken in years, a friend of man and servant of the Lord.

*PIONEERS IN ILLINOIS HORTICULTURE.

ARTHUR BRYANT, Princeton.

It has been the custom of our society to make mention of those of our members who have died during the past year. It has seemed to me to be eminently fitting that we should recognize the valuable services of the veterans in our society who are still with us. The first horticultural meeting of which we have any clear record, is one held in Princeton, Ill., in December, 1850, which was adjourned to meet in the same place in October of the next year, when the Northwestern Fruit Growers association was permanently organized. This was the first society of this kind west of the Alleghanies that embraced any great extent of country. The work they undertook, as we look at it, was immense. At that time our state was in its infancy, everything was new and untried. Facilities for communication and transportation were slow and limited. Testing the adaptation of the various kinds of fruits to our western soil and climate was a matter of no little moment. Immigrants from all parts of the union came to this new country and brought such varieties of fruit as they found desirable in their former homes, with their various local names attached. The consequence was the nomenclature of fruits was in a very chaotic state. Many nurseries had from one to two hundred varieties. Sometimes the same variety under three or four names, in other cases three or four kinds under the same name. The task before them was to eliminate from this mass of material whatever was found to be of value, and lay the foundation for a horticulture that was adapted for this new region. How well they succeeded the present condition of this industry in Illinois, and the reports of our society well show.

In looking over the records of the first horticultural meetings held in this state, I find the names of but few persons who are now living; not nore than half a score. Most of these are too advanced in years to take any active part in business, but all of them as much interested in "the art that does mend nature" as they ever were, and surely we can do no less than give a passing mention to these veterans who have grown grey in the service. These remarks are intended to apply to the first meetings of the Northwestern Fruit Growers' association, not later than 1853 or 1854, and entirely prior to the organization of the Illinois State Society.

*Read at the annual meeting of the State Society, but copy received too late for insertion in proceedings. SECRETARY.

At these meetings there do not seem to have been any persons present from further south than Peoria and Tazewell counties. At the Burlington and Alton meetings in 1855 and 1857 the state was more generally represented.

Of the list of thirty-one members at the organization of the State Society at Decatur, fully one-half of them were from what is now included in the southern district of this state. On another page of this volume will be found the portraits of some of these veterans who are still alive, and as a slight recognition of their services in our horticultural work, and to show our respect for these men, we have prepared short sketches of their lives and labors. Among those who have been most influential in the horticultural work of our state is our venerable friend and co-worker

*SAMUEL EDWARDS.

Faithful he has stood by us for half a century. He is the only person living, on record, who attended the horticultural meeting in 1846, and was present at the first meeting in Princeton, Illinois, in 1850. He was quite active in the organization of the horticultural society of Northern Illinois, and was president of that and the State Society at various times. The records of this society will show that he has been no passive member, always on hand and ready, zealous and enthusiastic almost to a fault. He has probably done more than any one living person for the horticultural interests of Northern Illinois. He came to the state in 1842, and located near Lamoille, where he improved a farm and carried on a nursery for over thirty years. He planted and sold large numbers of evergreens, practically carrying out his motto, "Screens from the bleak winds, the great need of our prairies." For many years "The Evergreens" was a noted place in this portion of the state. Many went to visit his grounds to see what a man of energy could accomplish in half a lifetime on the bare prairie. His fruits and genial companionship drew many visitors to his home, where all were made welcome. After leaving the farm he was chosen treasurer of Bureau county, which office he held for four years. Later on, he went to Peoria and was employed in writing and work on the agricultural columns of several papers, but wherever he was, his love for horticultural persuits would crop out and he always was planting trees, fruit and flowers.

*Since deceased.

F. K. PHŒNIX,

Now of Delevan, Wis., was born in Genessee county, New York, in 1823. He moved from New York to Delevan, Wis., in 1837, starting a nursery there in 1842. He attended the horticultural meeting in Princeton, Ill., in 1850, when Edson Harkness was President, and he served as Secretary and was an active member of the society for many years afterward. In 1852 he started his nursery near Bloomington, Ill., moving his family there in 1854, where for twenty years he carried on one of the largest establishments of the kind in the state. He returned to Delevan in 1879, and is still growing trees and taking a lively interest in horticulture and the general reformation of the world.

JOSEPH T. LITTLE

Came to Dixon, Ill., in 1839, and bought an interest in the second dry goods store established there. Leaving mercantile life in 1848, he invested in a farm, which eventually was turned into the Nachusa nursery. His interest in the pursuit won for it a reputation second to none for thriftiness and correct nomenclature of its trees and plants. At several different times he held important offices in Lee county, and has also been Secretary of the Illinois State Agricultural Society. The Northwest Fruit Growers' Association claimed him as a member, and he belonged to it when it was merged into the Illinois State Horticultural Society. Later on he sold his nursery and went to Washington, D. C., where he held a position under the Assistant Treasurer. He is now a hale and hearty man, living a retired life in Dixon, Ill. Always deeply interested in horticulture, he looks back upon the years when he was permitted to associate with the noble band of brethern comprising the Illinois State Horticultural Society as the happiest of his life.

DR. L. S. PENNINGTON

Was at a very early period interested in the horticultural interests of Illinois. We find his name among those that attended the meeting at Princeton, Ill., in 1851. He continued in the nursery business for many years, for a long time taking quite an active part in the society. He was among the first to plant a large orchard. At present he is living in Sterling, Ill., giving a general oversight to his farms.

O. B. GALUSHA

Has been one of the most active workers our society ever had. He was born in Bennington county, Vermont, in 1819, came from Michigan to Illinois in 1849, and settled near Lisbon, Kendall county, where he carried on the nursery business and fruit growing. In 1868 he sold his farm and located near Morris, Ill., where he engaged in growing small fruits and some nursery stock. Later on he moved to Peoria, Ill., where he now resides, a sunstroke, a severe sickness and failing health preventing any very active work. He took a leading part in the organization of this society, being elected its first Secretary in 1856, and holding that office until 1861. Later held the position for thirteen years, when he retired at his own request.

Twice he was elected President. He was a member of the State Board of Agriculture for four years, and was chosen as one of the original trustees of the Illinois State University, an institution for whose establishment he worked side by side with many other veterans of our society. In all these years of service to the society Mr. Galusha was faithful and untiring in his efforts to found the interests of horticulture in our state. As Secretary his reports were well arranged and carefully prepared and he was always ready to give his time and assistance wherever needed.

JOHN H. BRYANT

Was born in Cummington, Mass., July 22, 1807. He remained at home on the farm until 1831, when he started for the west, landing in Jacksonville, Ill. In the fall of 1832, just after the Black Hawk war, he, with his brother Cyrus, located near Princeton, Ill., where he has resided ever since. Mr. Bryant has been one of the leading men in that portion of the state. While he could not be called a politician, his influence has had much to do with shaping the course of political matters in the county and districts where he lives. At various times he has held positions of trust in the gift of the people and has always been identified with any measures that were brought up for the benefit of the public. He was the President of the first organized meeting of the Northwestern Fruit Growers' Association, and although he has never been a professional fruit grower, his inate love for the beautiful in nature has given him a great interest in horticultural matters, and led him to plant and care for trees, fruit and flowers. He is also a poet of no

mean accomplishments, as a neat volume of his published a few years ago will show. He is now in his ninety-first year, the last survivor of his family. With exceptionally good health for one of his years, and mind keen and clear as ever. In his poem at eighty-seven he shows with what fondness he still clings to life:

"Though thus bereft, life still is sweet.
All nature doth her promise fill,
The wild flowers blossom at my feet,
These glorious heavens are round me still."

WILLIAM H. MANN

Was born in Adair county, Kentucky, in 1827, and was the youngest of a family of five children. When quite young he moved with his father to Montgomery County, Illinois. His father dying, later on he went to Missouri, where he resided six years. Soon after he went to Texas and enlisted in a company of Texas Rangers. War being declared with Mexico, he entered the service of the United States, participated in several engagements, and when his term of service expired was honorably discharged. While in Texas he prepared a few bushels of Osage Orange seed for market. With these he started north, landing in Peoria in February, 1848. Mr. Mann failed in selling his seed, as the nurserymen and farmers were not acquainted with the value of the plant and were doubtful whether it would succeed in this northern climate.

About this time he became acquainted with Messrs. Harkness and Overman, who advised him to plant the seed, the venture was a success, and for many years afterwards he was one of the largest growers of hedge plants in the west. At the breaking out of the war in 1861, Mr. Mann assisted in raising the first quota of troops. Later on he helped to organize and was chosen captain of Company I, of the Ninety-Fourth Illinois regiment, which position he filled satisfactorily for two years.

In 1868 he purchased a tract of land near Gilman, Illinois, improved a large farm, and planted out large quantities of nursery stock and Osage seed.

In 1881 Mr. Mann visited Florida, and was so well pleased with the country and climate that he invested in a large body of land, laid out a town, and has planted out a large amount of orange trees and other fruits adapted to that locality.

WM. H. MANN.
SAMUEL EDWARDS.
JOHN H. BRYANT.

F. K. PHŒNIX.

JOSEPH T. LITTLE.
DR. L. S. PENNINGTON.
O. B. GALUSHA.

TRANSACTIONS

OF THE

TWENTY-FOURTH ANNUAL MEETING

AND

EIGHTH OF THE REORGANIZATION

OF THE

HORTICULTURAL SOCIETY

OF

SOUTHERN ILLINOIS

Held in Vienna, November 17 and 18, 1897.

REPORTED BY

E. G. MENDENHALL, SECRETARY, Kinmundy.

OFFICERS FOR 1898.

PRESIDENT.....J. WEBSTER, Centralia.
FIRST VICE-PRESIDENT.....J. W. STANTON, Richview.
SECOND VICE-PRESIDENT.....L. N. BEAL, Mt. Vernon.
THIRD VICE-PRESIDENT.....W. E. GALLENER, Vienna.
SECRETARY AND TREASURER.....E. G. MENDENHALL, Kinmundy

Place of next annual meeting Vandalia, November, 1898.

LIST OF MEMBERS.

Beal, L. N. ..... Mt. Vernon
Benson, J. N. ..... Vienna
Beauman, Harry ..... Tunnel Hill
Barbee, W. J. ..... Edgewood
Caspar, W. J. ..... New Burnside
Chapman, F. J. ..... Vienna
Chapman, Hon. P. T. ..... Vienna
Crain, W. R. ..... Villa Ridge
Cauble, I. ..... Elco
Clutts, John ..... Cobden
DuBois, A. M. ..... Cobden
Dintleman, L. F. ..... Belleville
Eckert, Hy C. ..... Belleville
Endicott, G. W. ..... Villa Ridge
Eastman, H. T. ..... Anna
Foster H. M. ..... New Burnside
Fuller, J. W. ..... Anna
Fitch, J. N. ..... Cobden
French, Prof. G. H. ..... Carbondale
Gillespie, J. F. ..... Simpson
Gould, Geo. ..... Villa Ridge
Goodrich, T. E. ..... Cobden
Gallener, W. E. ..... Vienna
Germain, J. H. ..... Belleville
Hartman, C. F. ..... Nashville
Hartley, W. A. ..... Walnut Hill
Harpster, Henry ..... St. Peter
Hehner, Phil D. ..... Mascoutah
Heaton, J. W., Jr. ..... New Burnside
Heaton, J. C. B. ..... New Burnside
Hook, Alfred ..... Vienna
Hill, I. B. ..... Charleston
Hertel, Chas. ..... Freeburg
Hammill, Chas. ..... West Union
Hileman, J. L. ..... Anna
Helms, F. ..... Belleville
Husband, J. ..... Leanderville
Jennette, E. R. ..... Anna
Johnson, Abe C ..... Mt. Vernon
Kinker, J. H. ..... Villa Ridge
Kretzinger, J. H. ..... Villa Ridge
Kell, M. C. ..... Kell

Karr, G. M.....Johnsonville
Kruse, H. J.....Farina
Lauter, John.....Belleville
Lanter, August.....Belleville
Mendenhall, E. G.....Kinmundy
Murphy, F. G.....York
McCabe, T. F.....New Burnside
Mozley, J. T.....Vienna
Migell, W. R.....New Burnside
Mathews, D. W.....Vienna
Mackey, J. C.....Vienna
McCaffrey, J.....Cobden
Mathews, J. B.....Marissa
Miller, J. B.....Anna
Neeper, A.....Kinmundy
Nelson, Wm. K.....Marissa
Poole, J. H.....Mill Creek
Parker, I. A. J.....Vienna
Parker, Lucas.....Vienna
Price, J. M.....Vienna
Perrine, C. M.....Fairfield
Reynalds, T. B.....Ozark
Riehl, E. A.....Alton
Simpson & Sons.....Vincennes, Ind
Stanton, J. W.....Richview
Simpson, O. B.....Fairfield
Span, W. A.....Vienna
Short, W. W.....Vienna
Spangler, L.....Ashley
Thomas, J. D.....Altamont
Thacker, F. B.....Vienna
Tincher, J. W.....Xenia
Tate, Geo. R.....Smithton
Vickers, A, K.....Vienna
Vaughn, J. G.....Odin
Webster, J.....Centralia
Wright, J. D.....Vienna
Whittenberg, D. W.....Vienna
Wright, J. D.....Vienna
Webster, C. H.....Centralia
Whitner, L. O.....Vienna
Wilgus, J.....Centralia
Williams, T. L.....Tamaroa
Warfield, B. C.....Sandoval
Whitford, E. M.....Farina

PROCEEDINGS

OF THE

Horticultural Society of Southern Illinois.

REPORTED BY

E. G. MENDENHALL, SECRETARY, Kinmundy.

The twenty-fourth annual meeting of the Horticultural Society of Southern Illinois convened in Beal's Opera House in the city of Vienna, November 17 and 18, 1897.

Rev. J. H. Ford, of the M. E. Church, opened the session with prayer.

Mayor J. M. C. Damron made the following address, introducing Judge A. K. Vickers:

I feel proud to-day to be able to meet this intelligent audience. I also feel that our country here needs the experience and advice of these scientific men and I feel that our country will be much benefited by this horticultural meeting. I feel impressed that we have as good a country here for the purpose of raising fruits and vegetables as there is, perhaps, in Southern Illinois. But I know that our people need to understand the scientific principles of horticulture. That is the great trouble in this country; our people are not educated to understand how to take care of and propagate their fruits. If we had a school for our young men—horticultural colleges so that our young men could give special attention to this science—it would be very beneficial to this country.

Gentlemen, I am not a speaker. I am glad to introduce Judge Vickers, who is an orator and a man who has given this subject a great deal of thought.

ADDRESS OF WELCOME.

JUDGE A. K. VICKERS.

Mr. President and Members of the Southern Illinois Horticultural Society:

I was much pleased with the Mayor's little talk if it had not been for the closing sentence in which he says that I am both an orator and a man that has given much thought to the subject of horticulture. Now, it is bad enough to take a man off the bench, without a second's warning, where he is trying a lawsuit in which a question of law is occupying his attention, and transfer him from the dingy, dusky, impure air of the court room to the sweeter, purer air of a horticultural hall like this. It is bad enough, I say, to transfer a man in this manner; but it is infinitely worse to introduce him as both a scientific speaker and a horticulturist.

He told you that we welcome you to our little town. I am sure that that sentiment is cordially seconded by every man, woman and child in the city of Vienna. We welcome you for no other reason only for purely selfish reasons, if we get what we expect to get out of it. But we will not be so ungenerous as to try to take everything and give nothing in return. While we mean to be enlightened on the subject of horticulture, we will treat you to our bacon and beans, our pork and mutton chops, etc., and will try to make your stay here pleasant.

The subject of horticulture, I wish to say, more especially to you of Johnson county, is a subject in which you can well afford to take deep interest. I feel quite sure that what will be said and done here, during the meetings of this association, will well repay you for giving every moment of your spare time to its sessions. The future success of the average farmer of Johnson county depends, to some extent, upon the extent in which he engages in the fruit raising business and the intelligence he brings to bear upon that subject. The time has long since passed when a man can make a success in any line of agriculture or horticulture by simply applying muscle and labor, without having that muscle and labor intelligently overseen by the well-informed men that grasp the science and progress of the age upon that topic. The time has passed when a farmer can expect to succeed unless he gets into the current—agricultural current. Connects himself, as it were, with the great telephone system that is established all over the county for his benefit,

and draws his information from the storehouse of agricultural science and progress, and keeps himself in touch with the great army of producers in this line.

Last summer I was in Champaign for a short time, and went out to our experiment station—I went to the horticultural station and examined into what was there, and done there at the expense of the government for the fruit growers of Illinois. You would all be surprised and delighted if you could go there and see the amount of money that is being expended there—that is all for the exclusive benefit of you and I and every citizen of this state who is engaged in the production of fruits and berries of any kind. The results of those experiments are published at the expense of the government. The postage is paid upon them and they are laid upon the table of every farmer and every citizen of the state, at no expense, whatever, except to call at the post office, if he will only send up there and say, "I want the bulletin." How many of you that have been digging around your blackberry briers, and in your orchards, trying to grow fruits; how many of you have taken the trouble to send a postal card to Mr. Blair, who is at the head of the horticultural experiments of the state with a request to send you the bulletin? If you have not done it, let me advise you, the very first duty you do, when you leave this hall, to get a postal card and send your name for it, and they will come just as regularly as your weekly paper, as soon as they are published, and then you will get the benefit of all of the experiments of the station. Is not that true, Mr. President? (By the President, "Yes, sir.") You will get all of that laid on you table here. You will find out a great many things that you will not find out in a lifetime—some things that you will not find out at all; because you are not prepared to make the experiments as they are there.

Professor Blair was astonished when I told him that we had a good fruit country down here. I said: "I want you to come down, Professor, and go with me, in my buggy, to see some of our pear orchards and apple orchards, and if we haven't, you can tell us." He says: "I will go." So he did come. He went all through Johnson county, to different places and, after spending three or four days looking over all the conditions that existed here, with reference to horticulture, Mr. Blair went away expressing himself as astonished at the orchards. He said all that we needed was development in order to make one of the most excellent counties for fruit in the state of Illinois. From here he went to Villa Ridge, to

Cobden, and I believe he went to Centralia. He went back feeling happy in the belief that Southern Illinois is a great fruit producing country.

Now, gentlemen, I want to say that there will be papers read from this rostrum, during the two days, that will voice the sentiment and experience of the country, I insist and urge you, from purely selfish if no other reasons, that you will attend and hear every word, that the fruit growers of this county may be better prepared for the growing of fruits in the years to come.

To the gentlemen who have kindly come to our town from a distance, we, from the very bottom of our hearts, welcome you here. I know that I voice the sentiment of every citizen of Johnson county when I say to you, Mr. President, that we are truly glad that you are here. We cannot, perhaps, make as good a showing as other counties more advanced. You cannot expect from us what you would get from full-grown men in this subject. But we are truly glad that you are here. Our latch strings are on the outside. We have numerous rooms in our houses and we will turn them over to you, kitchen, dining-room and all, and hope that you will be able to go away with pleasant recollections of the town of Vienna.

RESPONSE.

By Mr. Stanton.

Mr. President:

In behalf of this Society, I wish to thank you for the kind words of welcome.

We have met here to do what we can to further the interests of horticulture in Southern Illinois. We have come here by invitation of your citizens—by a delegation that kept at it for the last six or seven years everlastingly until they got us here. I am glad to see the meeting so well attended on the first day. It is evident to me that there is interest here; evident to me that you mean business; that you came here to learn something about horticulture. I cannot promise you what you will learn, but I can promise you that, if you attend the convention, that we will have an interesting and profitable meeting.

There is one thing that I always find—a disposition on the part of the public to sit still and say nothing when they might open their mouths and be asking questions—if there is anything you want to know, ask questions. We have

men here that have knowledge that they didn't read in books; they have actually dug it out of the ground. I think you will get valuable information from any of the gentlemen visiting here. My experience has only been limited in that regard. I have learned a good deal—largely by proxy. My observation has been close.

I couldn't make a suitable reply to the gentleman who has just spoken. I don't fell able to do so. I think our time can be spent more profitably in the business that we have met here for.

ADDRESS OF PRESIDENT.

MR. J. WEBSTER, Centralia.

Gentlemen of the Horticultural Society of Southern Illinois:

The hour has arrived for the afternoon session of this annual meeting. I am glad to meet so many of you. I trust all of you who have honored this society with your presence will find pleasure and some profit growing out of your attendance at this annual meeting, and that none may have occasion to regret being here by reason of any little inconveniences you may have had to encounter in reaching this enterprising little city of Johnson county, which is now apparently undergoing an evolution in horticulture that less favored counties with good direct transportation facilities have experienced years ago, which I trust you will all feel as I do, are conditions that are of interest to all of us as a society.

We hope that the relaxation from business and labor spent at this annual meeting may be profitable. This season may be correctly claimed as above an average one for the pushing enterprising fruit growers. Some of our products have been remunerative, though one of our earliest staple crops sold below cost of production in portions of Southern Illinois. I refer more particularly to the strawberry crop. The seasons as they pass, are marked by new difficulties, rapid and extreme changes, new fields are open, and unthought of competition is constantly confronting us. The younger men who must necessarily fill the places of those who drop out of the ranks, will no doubt solve the problems in the progressive evolution constantly going on.

At this time there are no doubt many things that need your careful deliberation. The aims and objects of this society should be more generally known throughout Southern

Illinois. We should strive to stand forth as a society on a broader plane of usefulness and helpfulness in everything pertaining to progressive fruit growing and marketing, as well as the planting and caring for beautiful trees and flowers, and as far as it is possible for us to do by our example, point the way. Our society has had its aims and objects wrongly construed by men who should have known better. In connection with one of the great railroad companies of the state, this great man, in his own estimation, positively refused to recommend to his superior officer that a pass be given the president of this society, because the society had the gall last year at your annual meeting at Cairo to appoint a committee of three, after passing a resolution to ask the Railroad and Warehouse Commissioners to change the classification of pears, making them the same as apples, which was done, but for this act, in self defense, your society and your committee are branded by an ordinary freight solicitor as a lot of cranks organized more for the purpose of securing lower transportation rates, and antagonizing the interest of the railroad company. All of you know how little of truth there is in this assertion. We regret that even one official in the employ of a great railroad company, who for thirty years has fostered, encouraged, advertised and in every possible way striven to build up the industry this society represents, should have the gall to slander us.

We believe that the members of this society will compare favorably with any society of business men, and fully realize the advantages we enjoy in prompt and rapid transportation services, and that our dependance on them for good railroad service is fully as great as the railroad company can be for the business growing out of the industries along their lines, and that we, as a society, in asking for a change in the classification as set forth at the last years resolution at Cairo, were only asking for simple justice in the classification of a product that was yearly becoming cheaper, and the shipping rates double apple rates were almost prohibitory, and to that extent our interests are mutual.

A resolution setting forth the true sentiments of the society toward the great transportation companies in Southern Illinois, might not be out of place at this time.

In behalf of the society we thank the progressive people of Vienna and Johnson counties for the cordial welcome given the society in your little city.

DISCUSSION.

MR. MENDENHALL—If this society took a little more interest in the matter of transportation and other matters of that kind, in connection with other works, it would be a good idea; and I think we ought to take more interest in the matter. I don't see why we are not, as an organization, in a position to do much in that way.

MR. J. W. STANTON—To let the people understand more fully the question of classification on pears, it was simply prohibitory. We couldn't ship pears. The rate for the distance of 265 miles was just about three times what it was on apples. On the other hand, the freight rate for three times the distance south, instead of north, was the same as apples was. There was a great inconsistency that we saw in the fruit rates, working on a great many articles. We took action at the Cairo meeting on the pear question. The secretary and myself presented the matter to the board of commissioners. We got it—just what we asked; we got it after considerable struggle. I don't see why it should be considered, in any way, out of place. This society is organized for the purpose of bettering our conditions. It is legitimate and right to the fruit grower. If they could carry pears in one direction for the same rate as apples, they should the other way. Therefore, we made the complaint to the board of commissioners and it was granted without any trouble. Not only that, but we learned something in our investigation. The secretary of the railway commissioners suggested that it might be a good idea to write to all the agents in Chicago and ask them if they knew of any reason why the classification on pears should not be the same as apples. The first reply that he received was from the Chicago & Alton R. R. Co. They said they didn't see any reason why; that they always made their rates the same.

There is not anything now that we can get without co-operation, and we cannot get co-operation without organization. What you people need here is organization in the way of shipping. It is an uphill business in starting, but after you get it started, then your people see what there is

in it and they will like it. It is a great advantage; if we do not have co-operation and organization, we will not effect much. One man cannot do business alone in any line; he has to have help.

Mr. Webster—It may not be out of place for me to say a few words on this classification business. I heard one morning that the railroad and warehouse commissioners were on a little trip south, and that they would be in Centralia sometime during the morning between 9 and 10 o'clock. I went down to the station and Superintendent Baker was there. I said to him: "I understand that the railroad and warehouse commissioners are coming by here this morning; will you introduce me to them?" He said he didn't know them but he would introduce me to them. I don't believe he would have done it if he had known what I wanted. When they came, Mr. Baker introduced me to them. They wanted to know what I wanted; I told them this matter of the classification of pears, and that I wanted the classification changed because of the injustice if nothing else. They assured me that it should have their attention. I also called their attention to the classification of Hickorynuts which is the same as Almonds.

SECRETARY-TREASURER'S REPORT.

E. G. Mendenhall.

Nov. 20, 1896.	Balance cash on hand from 1896	$238 93
" " "	From G. W. Endicott, for apples sold	3 00
Nov. 16, 1897.	Seventy-seven Memberships "paid to date"	77 00
		$318 93
Nov. 16, 1897.	Total expenses	195 43
	Balance on hand	$123 50

At this time a motion carried to refer above report to the auditing committee.

Your auditing committee have examined the accounts of the Secretary and Treasurer and fined the same correct.

Signed, L. N. Beal,
J. W. Fuller,
E. K. Jennett,
Committee.

REPORT OF FIRST VICE-PRESIDENT.

J. W. STANTON, RICHVIEW.

The fruit season just past has been fairly profitable and while the protracted drouth has no doubt cut short our small fruits for next season, we find apples and other tree fruits going into winter in fair condition.

The strawberry crop this season was fair in quality, prices were low. Pears and cherries very light crop. Peaches good crop and fair prices. Apples were fair crop and prices good.

In looking over the orchards in my district, I do not find anything of special interest to report only on Keiffer pear trees, I find many orchards badly blighted. One orchard of about fifteen acres was black with blight, don't think there was a sound tree in it. We had been led to believe up to this time, in our neighborhood, that the Keiffer was entirely exempt, but this season has developed an alarming condition in Keiffer orchards. My own Keiffer trees are, so far, free from blight, they are on high ground. I notice where orchards are on flat land, the blight is more general. Find the San Jose scale in several orchards and in my opinion it will be only a question of time, until the whole country will be infested with this plague.

I appeared before the legislative committee at Springfield last winter, several times, in our efforts to secure proper legislation to afford relief from this pest and to guard against further spread and importation of diseased nursery stock into this state. We were only partially successful and the state entomologist will no doubt do every thing possible as far as the means provided will permit. I want to warn all persons buying nursery stock, to be sure they are free from this scale.

DISCUSSION.

In answer to question as to remedy for the San Jose scale, Mr. Stanton replies: "Use soft soap. I have washed every tree that I have set out with soft soap from top to bottom. If there is any kind of an insect on it, it will destroy it. The trees ought to be thoroughly washed with it, otherwise you may set out trees with insects on, and you may not notice that there is any insect on it at all until

the tree has been stunted so that it will not do well. I didn't know for five years that I had these scales in the orchard. I went to Urbana last winter to the Entomologist and got a sample of it, and, upon making examination found them in my orchard. After an examination last year it was found to be all over the state in isolated places.

Mr. Beal—Prof. Blair told me yesterday that there were sixty-six orchards affected in the state of Illinois. The worst affected district is at Sparta, covering a territory twenty-five square miles. An appropriation was made by the legisture of $3,000. He says it would take every dollar of that appropriation to exterminate the San Jose scale in the Sparta district. He talked to me like he thought he would try to eradicate the scale in the other parts of the state and leave that part until he got more money. He said it was all over the state, that is, it is in twenty-five or thirty places in the state—they cover a good portion of the state. The Sparta country is so hilly and rough it is thought that it will be very hard to get rid of it there. They are Germans there and the country folks don't seem to care very much about it.

Mr. Jennette—How do you wash with the soap?

Mr. Stanton—I reduce it to about the consistency of paint and then I put a double handful of pulverized copperas to the bucketful and paint the trees. I think that copperas is one of the most objectionable things to insects, and rabits wont touch it. I have experimented on peach trees and am satisfied that it is good, and, believe, that if you will allow it to run around the roots that it will take the grubs entirely out of the trees. The same thing will apply to apple orchards; you will not be troubled with borers if you use that remedy in the season. Use it on apple, pear, cherry and peach trees. I have not found anything like this soft soap and copperas for the oystershell-bark louse.

—Question—How do you manage to get it on the trees when you have the San Jose scale?

Answer—I put a force of men to work—used it on 1,700 trees. It was not so large a task as I thought.

Q.—What kind of a brush do you use?

A.—Just an ordinary paint brush.

Q.—Does the scale ever penetrate the bark, or does it stay on the outside?

A.—The San Jose scale, just as soon as it is ushered into the world, struggles to a tender part of the growth, it will there insert its bill, and there it stays—just as soon as it inserts its bill into the bark, it sours the sap all around it, and then it begins to spread. I think there are about three generations in a season, and one individual will multiply at the rate of some 40,000,000 or 50,000,000.

Mr. Mendenhall, Secretary, produced samples of San Jose scale etc., to the Society for inspection sent him by Prof. Forbes.

REPORT OF SECOND VICE-PRESIDFNT.

L. N. Beal, Mt. Vernon.

The year of 1897 can be classed as a good fruit year, notwithstanding the heavy and late cold rains in the spring with frost as late as May 24, when we had quite a white frost, we were picking strawberries and apparently the frost did not do any injury. The crop of strawberries was good, and during our largest picking prices in Chicago were very low, so much so that shippers lost on the shipments made the last days of May and first days of June. Prices ranged in Chicago on those days at from 50 cents to $1.00 per 24-quart case for good berries.

Raspberries were a fair crop, but very few are grown in my vicinity. Prices were fair and I think more should be planted by those having good locations.

Blackberries were an immense crop, so much so tha they became unprofitable to ship them, and were allowed to go to waste. Wild blackberries were brought to town by the farmers and sold for five cents per gallon in trade.

Gooseberries—Of this fruit there was an immense crop, and they were free from mildew. They suffered some when about full grown from the hot sun which cooked them. All those in the top of the bushes where the leaves had dropped

off were completely destroyed. I think these leaves dropped from the effect of that late frost in May, because bushes which were protected by grape vines did not shed their leaves. The prices of gooseberries became so low in Chicago that many growers quit picking and let them go to waste. The prices ruled the lowest in all my experience, as I have grown gooseberries for many years, and this year marketed 140 bushels.

Currants are not grown to any extent and are not successful, as our dry summers and autumns kill the bushes.

Grapes—It would be difficult to see how grapes could produce a larger crop than they did this year. The quality was good and they were bothered less by the birds than usual. Prices were too low in the Chicago market to make shipping profitable from my section of country; sold at home for one cent per pound.

Cherries were almost a failure and the fortunate horticulturist who had cherries this year had a chance to increase his bank account. The cause of the failure I attribute to the cold rains while blossoming.

Pears were not a full crop, unless it was the Kieffer. You know I think it never fails. I had some Kieffer pears this year that were—well fairly good—I am yet waiting for those good eating Kieffer that my friend Webster promised me one year ago.

Peaches were better than usual, in fact better than for several years past, and the quality was also fine.

The plum crop was very abundant and the fruit exceptionally good and were a profitable crop this year.

Apples were not a full crop, but can be called a very good crop. The quality of the fruit was good. Apple buyers where they bought the apples by the bushel or barrel in the orchard, culled out fully one-half of them, but where they bought the orchard they culled out only about one-tenth or less—mostly less. Therefore the apples were good or bad, owing to the standpoint you view them from. But I must say many apples were wormy and scabby, and many suffered from the hot sun, which, where they were exposed too much, cooked them, this could not be avoided as well as the scab and wormy ones might have been. Those who had good orchards of winter apples done well with them and were well paid for the care and labor bestowed upon them, and I do not think the apple business is yet overdone. I find too many neglected orchards belonging to the general farmer for me to think otherwise. Horticulture is a science;

it is a business. The farmers in general do not study as much as they should, but the good crop and prices will stimulate many to gain more and better information on fruit growing. So be it.

REPORT OF COMMITTEE ON PEAR CLASSIFICATION

By Mr. Mendenhall.

I desire to say that so much has already been said about the results of this committee in the President's address and following discussion, that it would only be a waste of time to more than make an official statement that we had been successful, the only fight being made on us by one of our leading lines into the fruit belt of Illinois. But we won and we are grateful to the Railroad and Warehouse Commissioners. The rate is exactly the same as on apples in barrels and in car lots. We could not get it in baskets and other small packages.

I now ask that the report be accepted and the committee discharged.

A motion to accept the report and discharge the committee carried.

OUR BEST STRAWBERRY.

J. W. Fuller, Anna.

I do not feel that I am capable of deciding which is the best strawberry. We have now so many new and some old varieties that are favorites, that it is difficult to determine which variety is best, some do well in one locality and not in another. I have been growing strawberries for forty years past and am now as much lost as some are that have been but a few years growing them. My first plants were of Hoveys Seedling. What a wonderful change since I set my first plants. I have tested a great many new varieties as they were brought out only to become disappointed in some of them, still the strawberry has been steadly advancing towards larger and better berries. We have a long list of old and new varieties to select from now, a great many of them do well over a large extent of territory. The demand now seems to be for larger berries and it is a difficult point to decide which is best for all purposes. Bubach No. 5 seem to be a favorite polenized with Lady Thompson, also a berry of large size and of good quality, a splended berry of great

promise. Then we have the Bisel, a berry that has shown up well for two years past, also of large size and good color. The Golden Queen comes highly reccommended, a berry of large size and good color. The Greenville, Lovett's Early, Beder Wood, Tennesse Prolific, Bullrose by J. B. Miller; Madeline, Pollard, all the above named are large and favorites where planted in Southern Illinois.

SEEDLING STRAWBERRIES.

JOHN. MCCAFFREY, COBDEN.

I wish I could write so as to impress upon the members of this society the importance of this subject.

The strawberry is today one of the most important fruit of commerce, as it is one of the most widely distributed of any of our horticultural products, not excepting the apple, it is capable of adapting itself to almost all climates. While there is hardly a month in the year when some portion of our country is not shipping them to market. Hence I believe it is no exageration to say it is the most important of all our fruits, in-as-much as it furnishes more employment to labor in its production and transportation than any other fruit we cultivate. It is my observation that the average profitable life of any variety is about fifteen years, so the importance of constant renewal from seed must be obvious to all progressive fruit growers everywhere. It is also just as important in the fruit as it is in the animal kingdom, that the best blood should be used in the effort to produce new varieties and I beleive there is no blood equal to the Wilson, if you wish to produce a berry that will bear long carriage and go on the market in good condition.

I have been growing seedlings for the last fifteen years and in that time have produced but two varieties that I have considered good enough to propagate for general cultivation—the Golden King and Queen.

The Golden King was grown from seed of the Warfield, Pollenized by the Sharpless, and while not a long distance shipper, will carry 300 milles in good condition, and is a wonderful producer of large, well flavored berries in immense quanties, covering a season of from three to four weeks and carrying a very large amount of Palten.

The Golden Queen is a seedling of the Wilson and I regard it as the best commercial strawberry in cultivation. It can be shipped one thousand miles and arrive at its destination in sound condition.

In selecting fruit to propagate from, I take great pains to find a strong healthy plant that is well loaded with fruit, selecting the first well formed berry to ripen. I plant the seed as soon as picked, planting in a small box filled with good rich soil, obtained from about the cow stables, covering the seed lightly, say about the sixteenth of an inch, placing the box on the north side of some building where the soil can be kept cool and moist. Under favorable conditions the plants should be up in from two to three weeks. I let the young plants remain in the box until the next spring, selecting the most vigorous, then set them in the field I expect to pick from the following season, and if they do not show me some promising fruit the next spring I pay no more attention to them, but try again another season. As it is only by perseverance one can expect to succeed in the experimental field, besides one must be an enthusiast and have his heart in his work for best results.

DISCUSSION.

MR. MENDENHALL—I just want to say in regard to the Beder Wood; have tried it; we don't consider it of any account, at all, in Marion county, so far as I know.

MR. RIEHL—I don't want to do all the talking; I think there are people here that want to ask questions—ask them and some of us here will answer; if we don't know we will say so; we will try to answer you if we don't know.

MR. G. W. ENDICOTT—What is the best strawberry to grow?

Answer—The Crescent is a good variety for market—it depends upon whether you ship to Chicago.

Q.—Well, Chicago?

A.—You want a variety that will be ready for market early.

MR. JENNETTE—I wish to say for the Lady Thompson, it did well with me. One of my neighbors down there made a great success out of the Bubach; he got $3.00 and $3.50 for his, while others were cheaper.

MR. J. W. FULLER—The Lady Thompson we have tried in Union county, and we find it a splendid berry; a splendid seller and one of the best early berries—a large handsome berry.

Mr. Mendenhall—What is the best fertilizer for the Lady Thompson.

A.—By Mr. Jennette: One of the best fertilizers is the Tennessee Prolific.

Mr. Riehl—In regard to the difference in the reports on certain varieties: We are not always sure that all of us have the same thing under that name. I don't know that I have the Lady Thompson. True, I can refer back to my records and find out where I got it from. I know that in Southern Illinois, it is generally spoken well of, but it is my duty to report as I find it under my observation. I shall make it my business to get some of these plants in Southern Illinois and try them.

Mr. Heaton—There is one point that would probably be well to mention. We have land here of every character under the sun, from the poorest to the richest. Land that would produce so many bushels of corn or wheat; we understand that. I think we might know the kind of berries would grow on our poor land.

Mr. Fuller—The Michael, as I have seen it tested, grows better on poor land—land not too poor to grow corn. I find that the Michael grows on that kind of land—it don't make so many plants as on better land, that is the trouble on good land.

Mr. Webster—At Centralia, it is called Michael's Early. I think, probably, Michael's Early is right. It has succeeded better than any other early variety around Centralia. There has been sometimes four or five shipments of it before the other varieties.

Mr. Jennette—A neighbor of mine says you can't get anything for the Crescent.

Mr. Stanton—I think we should take into consideration the location—there was a time when the people in Union county succeeded with the Crescent; they got to raising earlier berries, the result was the Crescent does not pay there now. If the people down in Union county get to raising Michael's Early, it will, very likely, interfere with the people south. I have been trying to raise strawberries for about twenty

years. I set the first Michael strawberry I know of in our county. You have to keep jumping around all the time to keep in the procession.

MR. BEAL—You can not compare what corn will grow on land with what strawberries it will raise; some of our best berries grow on land so poor that it won't raise an umbrella.

MR. CASPER—I never saw a good strawberry on poor land in my life; you will find little dried up plants standing there which will probably bloom a few times; but the question is, will they get ripe in quantities to pay you for gathering them.

Has any of the gentlemen of this society had any experience with the Cobden Queen, and also the Cobden King?

MR. MENDENHALL—I grew the Cobden Queen this year. I was very much taken with it at its home in Cobden; and I found the same result—I don't want anything better. The Cobden King bears heavier than the Queen, but it is soft and will hardly do for distant market.

MR. STANTON—With regard to shipping berries in refrigerator cars; we shipped some berries last year to Buffalo, New York. Of course this was a very favorable season for shipping berries. It lacked one day of being a week before that car of berries was sold; we had no complaint as to the condition of the berries; they were in the car very near a week. There was a good many Crescent in the lot; at the same time, if the season had been wet and warm, it would not do to risk anything of that kind. My opinion is, for shipping berries in refrigerator cars you should have the car cooled out before putting the berries in, and they will ship most any distance. If you are loading at different stations, I don't see any difference if you keep the car iced.

MR. WEBSTER—For the past number of years I was president of the shipping association at Centralia. Some men have very erroneous ideas about shipping fruit in refrigerators. If your fruit is in bad condition when it is put in there it cannot come out in good condition; if your berries are soft, you cannot improve their condition by putting them in these cars. Berries put in the car full of the sun's heat will not reach the

market in good condition. Berries picked before nine o'clock get the best results. When picked in the latter part of the day, when the weather is extremely hot, will sometimes mold. Berries picked before nine o'clock in the morning will sell for a better price on the market.

Mr. Simpson, of Vienna—How thick should plants be allowed to grow?

Mr. Riehl—No closer than six inches apart; you can get larger berries and get more money out of them in that way.

Mr. Stanton—That is my experience.

Mr. Riehl—It has been my principle for several years to first run a line, and plant them where I want them and, after that, I treat all the runners as weeds.

REPORT OF AD-INTERIM COMMITTEE.

September 21st, 1897.

Trip to South-Eastern Illinois.

In company with Vice-President L. N. Beal we left Centralia, via. I. C. R. R., for Sandoval; our time at this point was short, to make an east bound train on the B. & O. R. R. Near Sandoval, we saw from the car window the Keiffer pear orchard belonging to Judge C. F. Patterson, once healthy and symmetrical, now badly disfigured by pear blight; this orchard has succumbed to blight sooner than any pear orchard in the vicinity. We understand that it has, from the time it was planted five years ago, received liberal treatment and cultivation. At this point we found two local apple buyers who were doing a brisk business; Mr. C. H. Dolson having been engaged for years in shipping all the kinds of fruit grown in the vicinity, commencing with strawberries, shipping often from 100 cases of berries per day, to five or more car-loads of summer fruit per week. He was at this time purchasing agent for a Cincinnati, Ohio, firm. and was paying for all the good apples offered, from $1.25 to $1.75 for Jonathan. The other local buyer was purchasing for a Chicago firm, and was getting some very fine small lots of Grimes' Golden, Rome Beauty and Spy. He was contracting one car load or more per day for October delivery, at 45 to 65 cents per bushel for Ben Davis. There are numerous small and a few large orchards in this vicinity which are well cared for.

We made our second stop at the rich old town of Xenia, which is situated on the undulating prairie on the B. & O. R. R. This is noted as the apple belt region of Clay county. We were driven in the afternoon to take a view of the orchards, which are the pride of the inhabitants of this old steady going town. In company with one of the oldest citizens, Captain Payne, and the genial Thomas M. Cox, who took great pride in showing the well cared for orchards with rows a mile or more long. We were driven in a carriage through one orchard of two hundred and fifty acres in one body, planted at three different times, making the age of a part, 8 years, 7 years and 6 years, showing only a few scattering apples, but an excellent good growth. Only the old orchards, twelve or more years planted, excepting an occasional one, that missed fruiting last year, are bearing this year.

We found Mr. Tully, of the Orchard City Bank, a very busy man. Besides his large general store and bank business, he had found time to purchase in small lots, Jonathan apples to the amount of one thousand two hundred barrels which he had sent to the city and placed in cold storage. Other local buyers were there shipping a car-load or more per day, before the season for picking Ben Davis had commenced. There were six apple buyers from Ohio at the hotel, who claim at this date to have contracted for sixty car loads, October delivery, to be shipped in bulk, paying an average price for number ones and twos of ninety-five cents per hundred weight. Although rain has not fallen here for about nine weeks, excepting one light shower, the orchards with a few exceptions show up excellantly. There are several thousand acres in a circle of five miles around Xenia, of from five to twelve years planted, besides some extensive older ones. A few of the older ones are now on the decline. John Engleton, now one of the oldest citizens, planted his first orchard of Ben Davis at the time the B. & O. R. R. was built. He then lived half way between Xenia and Flora, on the old St. Louis and Vincennes stage route. There are now in orchards of all ages, tributary to this old town, ten thousand acres.

September 22nd, our third stopping point was Flora, a thrifty town of four or five thousand inhabitants. Through the courtesy shown us by L. A. Mitchell, E. A. Shinn and B. M. Maxcy, we were piloted in a carriage behind two good horses, over the dusty roads, to view more of Clay county's orchards. The apple crop is light in the vicinity of Flora; some of the oldest orchards, however, that were considered past the stage of producing a fair market apple, are aston-

ishing the owners as to the quality and the quantity of the fruit, which had not colored up until the cool nights of the past week, but are now coloring up in good shape. We were driven through a twenty acre orchard, part of it ten, and part of it eleven years planted. This orchard, being near town, has been liberally manured with stable manure. It has had good cultivation for the first eight years, and very little trimming. A part of it was bearing the third crop in succession, of Ben Davis. There had been no cultivation this season; the weeds which had been cut down with a mower in August, were left lying on the ground, which was very hard and dry. The limbs dropped to the ground, furnishing a perfect shade to the body of the tree; the wood growth was abundant, clean and healthy. Even on that portion of the orchard which had borne almost a full crop three years in succession, the fruit was smooth and fairly well colored. We can only account for three crops in succession as a result of the liberal manuring and eight years of high cultivation. It is a remarkably uniform orchard and shows well for liberal treatment. There are several thousand acres of as pretty, well cared for orchards in the vicinity of Flora, of from four to fifteen years planted, as can be seen in Illinois. At one point on our drive, at a glance across the landscape, at least twenty-five hundred acres of orchards could be seen. Many of them had the benefit of liberal cultivation in connection with stock peas and soja beans. Every place where this crop was grown in orchards, the trees loomed up in fine shape. with a healthy green foliage clear to the terminal buds of the uppermost twigs. It shows very plainly that a loose surface shaded with a plant foliage, is the true method for orchard culture in Southern Illinois, and it needs no argument to show that such cultivation must, and will supercede all other methods, including Red Top, Timothy and Clover, with the successful orchardist. The orchards where a heavy crop of Red Top had been cut and fourteen dollars to sixteen dollars' worth of seed sold per acre, were nearly defoliated with the drouth and showed plainly that they had been bound in a hard, dry soil and robbed of what is necessary to produce an apple crop in the coming years. Where rag weeds and spanish needles were allowed to grow up through the summer, to be cut down in the droughty days of September, the condition of the tree was not a great deal better than where a robber had been and taken a crop of Red Top seed and straw. Evidently the best results are to be seen where the orchard is plowed three to four inches deep in early May, and disced (cut away) in the opposite direction, and again in June to

prepare for stock peas, which, from the tenth to the twentieth of June should be drilled into a well prepared seed bed, three pecks per acre, planted two inches deep, with a corn drill, or with a wheat drill, stopping up every other drill spout. It is important, to have a good stand, to shade the ground quickly, which is very much easier to do when the peas are drilled than when they are sowed broad-cast. Cultivation when young, once or twice, will often render succors more certain, and the ground will be more thoroughly shaded and loose. This crop of living green will build up the ground and build up the trees. and will be worth, for feeding purposes, from $4.00 to $7.00 per acre. These facts we got from practical men who had given this a practical test for four years in succession. We saw the orchards where this method of cultivation had been carried on, the trees showed a fine, healthy, uniform growth, all their foliage clear to the tips, at this late date, after a long drouth, giving us living testimony as to the merits of this system. These trees showed a good bank account and, like a man in that condition, will not disappoint his creditors. We visited the orchard of Mr. J. M. Cunningham, president of the Clay county horticultural society. This orchard, mostly Ben Davis, is near town and contains nearly one hundred acres. It had excellent care until it reached bearing age, except that it had very little trimming. It was bearing a light crop which, from some cause, was mostly on one side of the trees. We believe that Mr. Cunningham will find it necessary to do more trimming than has been done, and also to plow shallow and again prepare a loose surface. We did not see Mr. Cunningham, to get his ideas of future management. It is a fine orchard, and shows liberal treatment in its early stage. There are very many orchards of seven and eight years planting, where about twenty feet of the centers are cultivated in corn which show fairly good results, when compared with no cultivation, or with the robber system of Red Top for seed and roughness.

September 23, Sailor Springs, our fourth stopping place. This thriving inland village has quite a number of its prominent business men which take a great interest in the horticulture of the county. Mr. David Dilman has thirty acres of apples near the village, which has a partial crop this year. Peaches were a full crop, and of a fine quality. C. E. Hilts has eighty acres, north of the village, mostly Ben Davis, with a few rows of Jonathan and Akin. There is no fruit on this orchard this year, although it is nine years planted. We were informed by parties who had been to Summer, that a Mr. Caudle, near that town, has 150 trees

of Akin that were then loaded, bending to the ground with the second season's crop of this very pretty, new, red apple, and that they were very smooth, of uniform size and quite a favorite in that vicinity.

In the morning we returned by hack, with the mail carrier, to Clay City. Time would not permit of us taking a view of the many fine orchards south and west of this thrifty little city. We failed to see our esteemed friend, I. Mills, as he had gone out to one of his farms in the Wabash river bottoms. While waiting for the east bound train, we made a short visit to the Clay City Evaporator. The manager treated us very cordially and informed us that they were handling 500 bushels per day of wind falls, and that day, were paying 20 to 25 cents per 100 pounds.

We arrived at Olney just before noon on the third day out, and repaired at once to the place of business of our hustling, enterprising friend, J. F. Jolly. Through the courtesy of Messrs. Zook, Jolly and others interested in horticulture, the afternoon was devoted to viewing the orchards in the vicinity of Olney. We placed ourselves in charge of the genial Dr. Morris, who drove us in a circle of four or five miles, around the hustling, enterprising city of Olney. From the elevation we could see hundreds of acres of orchards of all ages and varying in size from 20 to 150 acres. The orchards, under the beneficient effects of the cultivation of Stock Peas and Soja Beans, dotted the landscape with patches of the brightest green. It left with us a lasting, favorable impression that Richland county orchardists are not behind any people of the state in solving the problem of orchard culture whilst they are coming into bearing. We found apple buyers here at Olney from Boston, New York, Canada, Ohio and Chicago.

The enterprising horticulturists of Olney and Richland county have provided themselves with an ice plant and quite an extensive cold storage warehouse. When their vast orchards come into bearing they will be prepared to ask buyers, at any time in winter, to come to Olney for their apple supplies.

In addition to the several thousands of well-cared for orchards, they have commenced to make an avenue of apple trees for twelve miles east of Olney. The old public highway, known in the forties as the St. Louis and Vincennes Stage road, is to be transformed into a pleasing avenue of apple trees. We understand that provisions are already made to care for them.

Our attention was particularly called to two orchards as being moldes, the owners having given them great care, and according to their individual ideas of management, have spared no expense. The eighty-acre orchard of L. G. Landerburger, we should judge, are mostly Ben Davis, planted 32x36 feet with peach trees between, one way. The trees are very uniform and show good care for the first six years, or until it was sown to Red Top grass. Two years a crop of this hay has been cut, the seed thrashed this year bringing $13 to $16 per acre. These crops and the peach trees, of which there are about forty or more per the acre, make the apple trees (in September), have the appearance of being robbed. Very much of the foliage has fallen off, the ground is hard and very dry, and we think decidedly unfavorable for fruit bud development.

J. F. Jolly is the owner of orchard No. 2, which is along the same road. Mr. Jolly, according to his best judgment, has spared no pains or expense to care for his orchard. He is a thorough cultivator and believes in building up his land by manure and green crops, but he is a little ticklish about plowing even three inches deep, in an eight year old orchard. He has grown stock peas upon his ground, and this season has a portion of it in soja beans. In June he planted as a fire protection a strip of soja beans 100 feet wide along the B. & O. R. R., the entire width of eighty acres. This was a truly beautiful sight—a wall of living green when all the rest of the surroundings were a barren, dry, droughty looking brown. A thorough protection against fire from railroads, thus avoiding the resulting litigation and hard feelings. Mr. Jolly shows a splendid orchard and an example to his neighbors and to the railroad company, worthy to be adopted by every orchard owner along the lines of railroads in the United States. As we looked over the landscape at pleasing, peaceful view, we remembered the fires we had seen, the traces of desolation, the law suits for orchard damages and the bad feeling and litigation, and the thought came to us that the railroad companies of Southern Illinois should use their good influence and hold out some inducement by purchasing the seed of this great plant, and instructing farmers to help protect themselves. As we studied and reflected on the scene before us, we thought how much better it would be for the railroad company to offer trip passes to the families of owners of orchards along their lines who would prepare the ground and plant a strip 100 feet wide of soja beans as a protection to their orchards from fire, and that it would be much cheaper and

better to have the good will of their neighbor farmers than this endless litigation with the consequent stirring and wrangling of bad blood. We visited the beautiful fruit and dairy farm of S. C. Mace, near Olney, and in the evening had a very pleasant chat with Messrs. Mace, Jolly, Zook, Morris and others, identified with progressive horticulture. In the early morning, before daylight, we departed for Fairfield. J. M. Staley and A. E. Roberts took us for a morning drive around that beautiful little city. We drove through some very extensive orchards—one of 300 acres. Here, as elsewhere, we found some orchards that were receiving good care, and others very poor. Thorough, frequent cultivation and the culture of green crops showed up well beside the let-alone-system of a heavy growth of rag weed and spanish needle, which is generally mowed down in August to enhance the danger of fire in September. Fairfield and vicinity has a vast acreage of orchards. Wayne county did nobly by us in supplying the World's Fair exhibit for Southern Illinois. Little inland village of Johnsville has in its vicinity several large orchards, but only an occasional old orchard in bearing this year. Wayne county Grimes Golden, Jonathan and York Imperial, have a reputation with their highly colored Ben Davis, second to no other portion of the state. They also raise a good many peaches in the vicinity and they have planted Keiffer pears quite extensively. Dr. C. W. Sibley has an orchard two years planted of 2,000 trees. This orchard is planted on broken, worn out hillside and we regretted to see some blight at this early stage. Mr. Cyrus Perrine, a nurseryman at this point has 250 trees adjoining town, loaded with fruit ready to pick. A. E. Roberts has 1,100 pear trees of the Lincoln Coreless and Keiffer. Mr. Parkhurst had a nice crop of Ben Davis on 950 trees near town, eight years planted, which he had just sold. These apples were of fine quality and would average a barrel to the tree.

In conclusion, to sum up our observations in our trip through a portion of the apple region of Southern Illinois. It is expensive to keep up the cultivation of center spaces after ten or twelve years. When the trees have reached bearing age, in our judgment, based on observations at this and other times, we cannot hope to attain to perfect apple growing except by some continuous system of shallow plowing and disc cultivation. This will require a constant stirring twice a month through May, June, July and the first half of August, unless a thorough seed bed is prepared, and stock peas or soja beans are drilled in on the spaces one way.

This may be done from the 1st to the 20th of June, and if they are cultivated twice or more by July 20th the ground will be perfectly shaded. Respectfully submitted,

J. Webster,
L. N. Beal.

DISCUSSION.

Mr. Riehl—The Lincoln Coreless is utterly worthless; it is a large, fine looking pear, but it never gets good to eat; it is full of tan bark. There is a pear that was called the Lincoln before this came out, that was better.

RASPBERRIES.

L. N. Beal, Mt. Vernon.

PLANTING.

When we read about raspberries writers say that any good corn ground will grow raspberries. It may be said in general, however, that raw sod ground should be avoided if possible, and it always pays to give the ground a thorough preparation. Ground where stock peas had been grown is in excellent shape for raspberries. Plow deep in the fall, and in the spring prepare the surface if need be by again plowing, but shallow. I would prefer to disc harrow in the spring, but this will depend on the season. Mark the rows with a plow, six feet apart. Mark deep, so you can set the plants four inches deep. Careful growers, who have given attention to this point have satisfied themselves that this gives the best results. The plants should be set three feet apart in the furrow and covered lightly at first, and then gradually fill up the furrow as growth progresses. Plants thus set stand the drouth better than shallow planting. Spring planting is to be preferred for black caps.

CULTIVATION.

Cultivation is not so much a question of tools used, but of the man. The idea is to keep the ground loose and clean. We all know what good cultivation is. Many successful growers mulch in the latter part of summer, with good results, some applying green cut clover hay along the row and keep the center spaces cultivated. This keeps the land moist and cool.

PRUNING.

Methods of pruning black caps are generally well understood by growers, and little difference is practiced only as to time. Some of us who are very busy with our farm work do not always have time to prune at the right time. But the young shoots should be nipped back when they reach the desired height, from two to three feet, and not allow them to get much higher, and then cutting back to the height required. If pinched low and at the right height the plant will throw out strong branches, making a well-balanced, self-supporting bush, while on the other hand, if allowed to grow higher and is then cut back, the buds seem weak and do not develop good laterals, for the canes generally die down for three or four inches of the top. If done at the right time the work is easy and should be gone over at least once a week for a few weeks to get all the canes as they attain the proper height.

VARIETIES.

With me the Ohio, Kansas and Gregg for black caps. Ohio, because they are a dry berry and ship well, besides being productive and hardy.

Kansas, because they are of good color, hardy and productive.

Gregg, because they are large and later than the former two. The Nemaha is also good, being as large as Gregg and more hardy.

Shaeffer is the best canning berry after the black, and is good for family use, but not for market. The color is not good.

Turner is the best all-round family red raspberry, but too soft to ship. The canes are hardy and can be grown by any one who will try. Brandywine and Thwack are firm berries and can be shipped, but I never found any red raspberry profitable.

RASPBERRIES IN SOUTHERN ILLINOIS.

O. B. Simpson, Fairfield.

The requirements necessary to success in growing raspberries are much the same as for other small fruits, and no one need expect to succeed who has not a love for that kind of work, neither should one expect to succeed from a commercial standpoint who is not favorably located both as to soil and market.

The soil should be well drained and should be rich, especially in potash; but manure containing a large amount of nitogen should not be used too freely, avoid planting on wet land or land that is bad to heave in winter.

As to markets a good local one is to be preferred, but if one hasn't that he should be so situated as to have the advantage of good shipping facilities.

When there are good horticultural papers to be had so cheap and when one dollar will pay a membership fee in the society of Southern Illinois and procure a copy of the horticultural proceedings of the whole state it seem as if there should be no excuse for one to grope in the dark.

In these days of close competition whoever does not obtain all the information he can get from others in regard to his occupation, study it well and then make a practical application or use of his knowledge will soon find his better informed and more enterprising brethren laying their products at the doors of his patrons cheaper than he thinks they can be grown, and is likely to be heard complaining that the business in which he is engaged is overdone and perhaps will soon be found engaging in some other occupation, there to meet the same obstacles that confronted him in his former occupation or calling.

How to always be able to obtain good reliable help just when needed at a price which the grower can afford to pay is an important factor in the successful growing of raspberries, as well as other small fruits, and is one upon which I would not be able to enlighten this society.

It seems to me that this question alone and of itself is of sufficient importance to be the subject of a paper at some future meeting of this society.

I do not consider it necessary to say to this well informed and experienced body of horticulturists that perseverence is essential to the successful growing of raspberries, but to those before whom this paper may come who have as yet not learned this fact in the best of all schools, that of experience, I would say do not become discouraged if you should fail in your first efforts, but look back and see what have been the mistakes of the past, avoid them in the future, and try again. There is an old saying that a "faint heart never won a fair lady," neither will it ever successfully grow raspberries.

It is very essential to success in growing raspberries that the work be done in the proper time as well as in the proper manner, and in order to be able to do this one should try to

have his other work so arranged that it will not be pressing when the raspberries need attention. After the manner of the Apostle Paul's advice to his beloved Timothy, I would say "be instant in season and thoughtfully hopeful and diligent at all times and success will be your reward."

DISCUSSION.

Mr. Riehl—I have a criticism to make. I agree with everything that Mr. Beal said, in the main, but when he says that he would first pinch the raspberries off when they are from two to three feet high, I think that is too high; I prefer to do my pinching when they are from 14 to 16 inches; I find that is plenty high enough. If you get them too high, they are apt to blow over. I believe the Schaffer to be all right as far south as Mr. Beal lives; further north it is apt to be affected by the winter. I think the Columbian is better than the Hybrids.

Mr. Goodrich—It seem to me that Mr. Riehl has gone to extreme lengths; it is my experience, if you pinch them so low, they will make so many branches at the top that it will make them top heavy, then you need to pinch them once after that, and may be twice, the best is between the two extremes; I would rather meet on the center and make it two feet.

Mr. Jennette—I find it very difficult to make raspberries grow. I planted last year in land in fine shape. I found it extremely hard to make them grow; they ought to be planted very early in the season.

Mr. Fuller—My experience is not to let too many grow in a hill; if you let too many clusters grow together, they don't ripen so well; I prefer four or five canes to the hill.

Mr. Mendenhall—I want to make one remark about the Gregg; I find that the winter kills them every year and that is the general complaint. I would like to hear the experience of some one that has been growing the Loudon.

Mr. Goodrich (to Mr. Riehl)—Have you shipped the Miller enough to know about it?

Mr. Riehl—No, sir; I have just simply been experimenting.

Question. Do you know of their being shipped?

Answer. No, sir.

Mr. Jennette—I shipped a quantity of the Miller raspberry last year and saw them being shipped; I consider them one of the best shippers.

Question. How do they sell?

Answer—They sell well.

Mr Simpson—The Miller is sent out by the same man who sent out the Brandywine. I would like to ask the member whether cow peas would be good to plant in the rows after the fruiting is over and then, in the fall, turn them under, would it be good manure?

Mr. Gould—We planted peas in our raspberries this year and they did well.

Mr. Webster—I would think myself that where the rows are seven or eight feet apart, it would be good to plant peas in them.

Mr. Palmer—Mr. Chairman: I would like to ask my Cobden friends about the Palmer raspberry?

Mr. McCaffrey—I have not grown them, Mr. President, but my neighbor, Mr. Buck, has; I don't think they will endure much dry weather.

GATHERING, PACKING AND MARKETING SMALL FRUIT.

T. E. Goodrich, Cobden.

Gather strawberries and blackberries in quart boxes, raspberries in pints. Handle with the greatest care possible. Do not pick or handle when wet with dew or rain if it can be avoided. Rough handling make decay and loss. Moisture tends to heat, and heat soon renders fruit worthless. Choose warm and sunny hours if possible and pick directly into the boxes. Make a rule against pickers holding berries in their hands while picking. The temperature of a hot sweaty hand is too great for the welfare of the fruit. Let the berries be gently dropped into the box. Supply each picker with a hand crate holding not to exceed eight boxes.

A greater number requires the retention of the berries too long in the heat of the field. When filled, the crates should be promptly carried to the shed and be allowed to cool.

The packing of fruit is the process, more or less elaborate of preparing it for market. Some of our best growers and shippers do not pack fruit at all. They simply level the tops of the boxes, and remove what broken leaves or other things may be in sight, left by accident by the pickers.

They claim that the process of overhauling the fruit in packing is more harmful than helpful. That a strict supervision of the pickers in the field will obviate the necessity of more than a casual adjustment of the top of the boxes.

Other good growers advise a thorough inspection of the contents of the boxes from top to bottom; claim this to be the only way to free the boxes from soft and rotten berries.

Perhaps a modification of the two systems is the most reasonable.

If the weather is favorable, and one has good pickers enough to keep the patch picked up close, very little packing will be necessary; and, of course, the less the better. But if the weather is rainey, or excessively hot, and berries ripen a little faster than they can be picked—which is frequently the case, and soft fruit is scattered through the boxes with leaves and trash. A search more or less thorough is imperitive.

MARKETING.

After a score of years experience as a fruit grower, I am more and more convinced of the truth of the saying, "Any fool can raise fruit, but it takes a wise man to sell it."

Many very learned theories are advanced about "fruit distribution," corporative selling, etc., but most unfortunately for the fruit grown the larger part fail of their object.

But this paper is to be confined more to the preparing of fruit for market than the selling.

Remember that berries must be attractive—they must look well.

If one desires to sell a house he paints and beautifies it. If a miror he brushes the frame and polishes the glass. Neither is more valuable than before, but look better and sell better. So with fruit. After it is packed and made ready for market it is not more valuable than before, but more pleasing to the eye—consequently more saleable.

A great deal of talk is made, and advise given, about sending nothing but the best to market, throwing away or feeding to stock the rest.

But suppose one has nothing but second quality. Must they throw away all they have?

Do millers throw away the second quality of flour? Do tailors make up nothing but all wool cloth?

Are there not several grades of sugar, tea and coffee, made expressly to fit all purses? Then why not several grades of fruit?

In packing study appearances; use neat packages plainly marked.

If the apple or the peach has a beautiful red cheek, why hide it in the bottom of the box? It is your privilage and your duty to place it conspicuously on the top of the basket where it can shine like a diamond and be seen and known of all men?

Did not the good book say "men do not light a candle to put it under a bushel." Did not the fruit venders on the streets of Queenly Jerusalem carefully preserve the bloom on the grape and the blush of the pomie granite?

And did not the passing Rubis give them words of approval for their "good business methods?"

Did not Mother Eve select the pretiest Ben Davis in her orchard and present its most attractive side to the market? Did not Adam purchase at a high price the title deeds to his entire estate and walk out of his front gate a peniless man? It was indeed the highest price ever paid for a crop of apples. This was an illustrious example of the value of carefull fruit packing.

Barnum was not quite right. The world does not like to be humbuged, but honestly dealt with and well fed.

The heritage of the man who raises unpalatable fruit packed in an indifferent manner will be obscurity and want. While the one who grows lucious fruit, carefully and honestly packed, will have the blessings of his fellow men and riches and honor and power.

BLACKBERRIES.

"The Early Harvest"—Mr. H. C. Heaton.

I commenced growing the Early Harvest, I believe, in 1882. I know of no one who had Early Harvest blackberries at the time in this country. I commenced growing them at that time for the purpose of having quite a crop in 1893. I

commenced trying to sell them to my neighbors; I had great confidence in the future of the blackberries, in 1893, the World's Fair year. I had something over five acres in blackberries and, as you all know, blackberries at that time were very profitable; and then I sold to my neighbors; they got them and planted them until now in Johnson county, especially in the vicinity of New Burnside, you could not give them away if you furnish a cromo. We don't want any more Early Harvest blackberries in our section of the country. Up to the last two years Early Harvest was paying, but during the last two years, they have been an absolute failure for money. I suppose there was only one-tenth of the berries grown in our vicinity that was marketed at all, and they were marketed generally at a loss. There were some of us who, probably, came out a little ahead, but they have been a failure to the fruit growers in the last two years in the matter of profit.

Mr. Webster—Was it because of over production of blackberries? A.—I think not.

Mr. Webster—Under consumption? A.—I will leave that for the brethren to solve.

The Snyder—E. G. Mendenhall, Kinmundy.

Is there any portion of Southern Illinois where the Snyder can be grown to any commercial advantage? I have tried it on the prairie and in bottom land, but find it has no chance with the summer heat and drouth of Southern Illinois; it dries up before the crop can be ripened and gathered.

It is my opinion that no late blackberry can be of any advantage to commercial fruit growers in Southern Illinois. I have been told that it does well in soil around Vincennes, Ind., and they seem to grow it largely there.

It is a sweet berry, and the first ripening is very excellent. The cane growth is something wonderful and with heavy cutting back it requires room. When planting, would advise setting 8x10 feet and cultivating both ways.

It is undoubtedly as hardy a blackberry as grows and will stand the mercury a long way below zero.

Best Varieties and Treatment—Abe C. Johnson, Mt. Vernon.

I have been assigned the task of writing a paper on the above subject, best varieties of blackberries and their treatment. There are many of you who have had more experience in the growing of blackberries than I have had, but as one

can't tell it all and as I know that there are others to help me out on the blackberry question, I will proceed with this paper.

First, would select a piece of land about as nearly level as I could get it, with a very slight incline to the south, and in such shape that I could run the rows north and south. Said piece of ground should be very rich soil and if tile-drained, so much the better; then it ought to be ploughed deep and subsoiled and well pulverized, until there is not a clod to be seen: then run furrows as straght as a line, with a suitable plow, eight feet apart for four rows, then I would leave a space of ten feet, then four rows eight feet again, then another space of ten feet and so on to the last row. Those wide middles would be for the purpose of driving a wagon through to gather the brush of the trimmings, for the purpose of spreading manure and for spreading green clover hay to mulch in the rows, or any other material like straw, etc. Then I would set the plants three feet apart in the row, using a shovel to fill in the dirt, firming it very solid, with foot, around each plant; then take a one-horse turning plow and throw a furrow on each side of the row. I would prefer doing this in the fall, say from 10th to 25th of October, then in April, when the ground is in good working order; would work the ridge down with a hoe to a level, then would cultivate with a "Plant Junior" cultivator, would cultivate shallow all the time; would also recommend "Breed's Weeder" as another cultivator, and would also use a roller after each cultivation, when not too wet, yet if the weather is not inclined to be dry, would not use the roller.

Now, for varieties: Would plant Early Harvest, Ancient Briton and Eldorado; would top the canes the first year to one foot high, by pinching or with small pruning shears; would use hoe to keep the row clean and would treat every plant that was not directly in the hill the same as weeds, cut them out. The laterals, on the first year's cane, would clip to one foot long in the spring, then, as soon as the fruit was off, would cut out all the old canes and top the second year's canes to two feet and a half. Just as soon as they attained this height, which, in order to do, will probably have to go over about three times, as they wont all attain this height at the same time. It is very essential to do this topping as soon as the cane gets to the groper height, in order that you get your latterals all right; then in the spring, always clip the latterals about last of March or first of April, leaving them two feet long after first year, cutting out any weak or immature ones and always cutting out the old wood as soon

as the fruit is off, and burning it. Would recommend mulching directly in the row, say two feet wide with old straw. As being better and cheaper than hoeing, would only cultivate often enough to keep weeds down entirely, unless the weather is dry and then would cultivate often, also use the roller after each cultivation. Would use barn-yard manure, wood-ashes, commercial fertilizers or any good fertilizer, more or less every year and would recommend spraying when and wherever needed.

What we want and need is suggestions, but the prudent man weighs well all he reads, modifies the practicable to suit his condition, stores his mind with the best thoughts of his fellow-workers and then does his own thinking for himself. He fits himself by digesting others' thoughts, then depends on his own trained judgment.

DISCUSSION.—Blackberries.

MR. SIMPSON—As to the Snyder blackberry around Vincennes, my father was the first to try it there. We had out ten acres of them; we found them very profitable. I would like to ask my friend Heaton if Early Harvest is unprofitable. I don't think there is anything else that would do nearly so well as the Early Harvest.

MR. STANTON—I don't like to see the blackberry business done away with; we have had a good many blackberries and I am a little bit ahead on them. The Early Harvest is one of the best berries—they furnish a good deal of labor for those who want to labor. I don't believe there ever was a year that there was such a universal blackberry crop as there has been in the last two years, and I think that is the cause of the Early Harvest not being so profitable.

THE SECRETARY—In Marion county, everybody that grew blackberries made money on them.

THE PRESIDENT—Blackberries will not stand being reshipped. People who handle blackberries must understand that they must find a market for them. Blackberies will sour if they stand over. I want to call attention to the Secretary's remark. He seems to have an idea that nobody in Marion county lost money on shipments; I know of one man losing; I know that he would have lost a great deal of

money if he hadn't stopped. The last shipment he made, he told me that he lost something near $60.00. I have been growing blackberries since 1867, and I have never seen the time that I haven't made money out of blackberries, or would have made something, until last year.

MR. CASPER—My wife ran a little blackberry ranch up here and she says she actually made $15.00.

THE PRESIDENT—She must have quit early? A. She didn't; she went the season through. She says she made an average of 15 cents a case.

MR. BEAL—It seems like the outlook for the blackberry is rather dark. I don't want to quit the blackberry entirely. I don't know but what we could help the blackberry a little bit if we wouldn't grow so many free for our neighbors in the fence rows. I have known pastures of wild berries to sell for $5.00, and let the shippers go and get the berries. I believe if we would clean out some of our fence corners, where they grow spontaneously, where everybody can help themselves and gather them and sell them, and it don't cost them anything except the picking; that effects the market.

PROF. BLAIR—Has any one present had any experience in packing and shipping wild blackberries. Has anybody had any experience in propagating the wild berry?

MR. STANTON—I will say to the professor that my first experience in the berry business was with wild blackberries. As to propagating wild blackberries I will say this, once a nurseryman came down to our county digging them up for the purpose of propagating, but I don't think he propagated them; I think he sold them just the way he got them.

THE PRESIDENT—There is one question in regard to blackberries, the price that growers, under the present conditions, can afford to pay for picking. In our neighborhood we have never been able to get blackberries picked for less than two cents; we are paying just as much now for picking as we did when they sold for $2.50 to $4.00 a case, 48 cents a case then for picking was not so much. I don't think they pay as much any other place as we do in Southern Illinois.

Take the matter of strawberries, too, I have talked with the men of Michigan—that have been raising strawberries—and they never pay more than a cent and a half per quart. Is it not proper to take into consideration what they sell at? If they are worth 48 cents for picking and sell in Chicago at 50 cents, where is the profit?

QUESTION—If the President can tell us any way by which we can regulate this matter, we will be glad to hear it.

MR. STANTON—I neglected to state that the wild blackberry ships better than the Early Harvest.

MR. WEBSTER—Well, we have some that I think are really a wild blackberry that are being cultivated, but I think it improves them very much; they grow larger, somewhat, than the others. I think, if they are propagated, they will be better than the Early Harvest.

MR. RIEHL—I want to say one word on the cultivation of the wild blackberry; it is more than probable that all of our tame blackberries are wild berries brought into cultivation; that is where we got the Early Harvest, and where we got all the other varieties produced by cultivation.

PLANTING, CARE AND PRUNING OF GRAPES.

G. W. ENDICOTT, Villa Ridge.

When our Secretary informed me that I would be expected to read a paper on this subject I felt grateful to him that he had divided the subject of grapes into three parts, and had given me but one of them.

If he had done such a thing twenty years ago, the probabilities are that I would have kicked because he thought me incompetent to handle the whole subject of grapes from A to Z; but time brings change, so that twenty-five years' experience and the fruiting of more than fifty varieties I now feel incompetent to do justice to the part he has assigned me.

In this paper I will only state what course I should pursue in planting, caring for and pruning a vineyard for my own use. The land should be nearly level and fairly good land for wheat. This should be subsoiled sixteen to twenty inches deep in the fall or early winter. As soon as the ground is dry in the spring I would plow it in lands eleven feet wide. Along the dead furrow I would sow a mixture of ground bone and muriate of potash—300 pounds of bone to 150 pounds

of potash per acre—and run a cultivator three or four times through it; then stake the land seven feet apart in the furrow and set an A No. 1 one year rooted cutting to each stake.

Care the first year would consist of oft repeated shallow cultivation and keeping the young vines tied up to the temporary stakes. The following winter the permanent stakes should be set and the young vines cut back to two or three buds. In the following spring, when the ground is in good fix, three furrows should be turned to the stakes on each side with a one-horse plow; then put in the subsoiler with a good heavy team and work the balance of the land between the rows as deep as the team can pull it. After this deep working never stir the land more than three inches deep at any future working, but work it early and often until the first of July; then, at the last working, sow one bushel of cow peas to each acre, and make this a rule as long as the vineyard lasts.

Now, as to the pruning and training of the vine, there are systems without number. All are good in a way, but some better for one country than another. The best thing I have found, all things considered, is to stretch the top wire of your trellis about five and one-half feet high, then stretch another wire two feet lower on the posts. Make it fast to the post, then raise it to the top wire half way between the posts and fasten with small soft wire, then down to the post two feet from top and fasten with staple as at first post and repeat to the end of the row.

Train the vine up the stake to the top and pinch. First pruning after the vine is to the top of the stake clean it off to a single stem and train it straight up the post to the lower wire, then wind it around the post to the top and fasten with wire nail.

The next pruning leave a cane on each side near the lower wire and train it on this wire at an angle of nearly forty degrees, and always cut away all wood but two buds on each spur and never allow the spurs to be nearer than five or six inches.

If I undertake to go any farther with this pruning description without a blackboard I would soon be in deep water.

THURSDAY MORNING.

Report of Committee on Resolutions.

OBITUARY.

Whereas, Our Heavenly Father, in His infinite wisdom has, since our last meeting, removed from our midst our friend and comrade in horticulture, J. H. Mitchell, of Anna; therefore, be it

Resolved, That this society feels keenly its loss in the death of a member and friend, and hereby extend to the bereaved family and friends its sympathy and condolence.

The Secretary is hereby directed to forward a copy of these resolutions to the family of the deceased.

E. R. Jinnette,
J. W. Fuller,
Committee.

PROFITABLE PEACH GROWING.

George Gould, Villa Ridge.

Mr. President:

I am afraid that I will not be able to say anything on this subject to do it justice.

The biggest mistake, I think, with peach growers is on the wrong varieties—varieties not adapted to the soil. Some varieties require rich soil and some poor soil. Most do best on high, dry and well-drained soil—very few will do on bottom lands; sometimes a few will do. I think parties planting orchards, it would be a good idea to get an outlook of the peaches that are growing in their neighborhood; first get acquainted with the business a little bit before they plant. I think that on good land peach trees should be planted about twenty feet apart in this country.

I would not choose anything but the hardy. The hardiest we have is the Mamie Ross, Chairs Choice and others.

The ground should be plowed; not too much, but should be kept clean; not plowed too deep, but shallow as possible. When you plow deep the ground holds too much moisture and it takes too long in the season for the moisture to leave the ground. I think that shallow plowing in the hilly lands where there is drainage gives the best peach crop.

PRUNING.

You don't need much prunning for the peach. Do not let the brush grow up around the trees, keep the ground clean and then you get rid of a good deal of the mildew. I think it is a good plan to plow after the fruit is gathered; by that means you plow under the rotten fruit—the more you plow under the rotten fruit the less mildew you have the next year.

I haven't had much experience in spraying. I have seen some people spraying. I think it does more damage than good. I don't think peaches will stand paris green in any form.

My varieties would be: I like the Early York; there are several kinds of Early York; this kind is not a very large Early York, it is a nice peach. Next on the list would be Mamie Ross, a good peach with a tough skin; it is a very hardy peach. Next would be the Elberta and the Turber. I think that is about all I want to say to day.

QUESTION—How about the Heath Cling?

ANSWER—Everybody knows about the Heath Cling; if you get a crop of Heath Cling they are pretty hard to get rid of.

QUESTION—When does the Thurber ripen?

ANSWER—It ought to be about a week before the Old Mixon——

I would not put peaches near the timber if I could avoid it.

QUESTION—Why?

ANSWER—The trees will be subjected to all manner of bugs and borers.

DISCUSSION.

MR. MENDENHALL—I have three genuine Champion peaches and they get ripe about two weeks after the Alexander. I haven't any for sale, but they are an excellent peach.

THE PRESIDENT—If you will allow me I will tell you what I know of the Champion. We have three trees on our place; they came from Nokomis. They are a good sized peach—creamy white and very juicy. The Thurber is good, but not strictly first class; one of the hardiest trees——

QUESTION—I would like to ask Mr. Gallener what he knows of the Sneed?

ANSWER—It is a very early peach.

QUESTION—Have you ever fruited it?

ANSWER—Yes, sir; I have known them to be all ripe and gone by wheat harvest.

QUESTION—What other peach does it ripen with?

ANSWER—I don't know of any variety as early as it is.

QUESTION—Earlier than the Alexander and Amsden?

ANSWER—Yes; all gone by the time they are ripe. It is the earliest peach that I know anything of. It is a very fair sized peach; of course it does not compare with those later varieties for quality.

QUESTION—Is it a free stone?

ANSWER—Well, none of those early peaches is entirely free stone.

MR. REIHL—Is it not a seedling of the Alexander?

ANSWER—No, sir.

MR. RIEHL—I am told so.

ANSWER—That is not so. It belongs to the Chinese family; it is a creamy white like those of the Chinese class; it is not a free and yet it is not altogether a cling, but it is rather between——

QUESTION—Tell us where they originated?

ANSWER—I cannot.

MR. GOULD—It originated in a nursery in Mississippi. I fruited some of them, but they didn't do well.

QUESTION—What soil would you plant the Sneed on?

MR. GOULD—I would plant them on thin soil. In planting peaches it is bad policy to put early ones and late ones together. If you do, before the season is over you will have nothing but mildew——

MR. REIHL—I think Mr. Gould is wrong in one thing. He has told you about the Mamie Ross. I believe he has got another peach. I have had some difficulty in the name of "Minnie;" it is a most excellent peach and it ought not to have two names. I know there is another peach by the name of Mamie Ross. He means the Minnie, but he says the Mamie Ross. I think I have heard of the Mamie Ross before

I heard of the Minnie. I don't think the name applies to the variety he speaks of. I think what he speaks of is what I have called the Minnie.

MR. GOULD—I refer Mr. Riehl to Mr. Munson; he can speak for himself.

MR. MCCAFFREY—Is it not a fact that the early varieties of the peach are an injury to the country?

ANSWER—Yes, sir.

MR. MCCAFFREY—Would it not be better to discard all these early varieties because they carry the rot with them? If I had a peach orchard, I would not want the Alexander and other early varieties, because of their disposition to rot, I think they ought to be discarded.

MR. RIEHL—This is true of the Mamie Ross, but the Minnie does not rot so much. I think, though, it rots some, because at that time of the year the conditions are such that they will rot.

THE PRESIDENT—The people in the vicinity of Centralia have abandoned that class of peaches; nothing with us is profitable until the Mountain Rose comes in.

MR. GOODRICH—I think we ought to be very careful, as a convention, about recommending anything that is for bad. I don't see why nurserymen propagate such peaches and sell to the public when they are a detriment to the country; if they did not, I think these varieties would drop out of sight. I think three or four varieties are doing the peach market, the peach grower and the peach consumer more harm than all the rest of the drawbacks all put together. If the words that we say here are to influence peach growers in Southern Illinois, we ought to be very careful. I absolutely would not have the Sneed growing on my place. I am told that they came directly from the Alexander. I think we ought to be emphatic in demanding a peach that is not a detriment to the country. We ought to speak out and let it be known. That is why I speak about it, so that others may see some of the mistakes we make.

MR. GALLENER—We, as nurserymen, have to provide for our customers. Sometimes a customer wants trees and says

he wants the earliest peach you have. It is not absolutely worthless; it is the only early peach you can take into your home market. I would not advise customers to plant it for a commercial way. A great many people prefer to have them; you get some good peaches.

Mr. Gould—There was a time when there was more money made off the Alexander than any other peach for the market. I remember when my neighbor made some $600 or $700 off of his Alexander peaches. It went very much like the Early Harvest blackberry, it is a good blackberry but it don't bring any money; it is the same way with the Alexander peach. If the Alexander peaches were all gone out of the country, it would be worth $1.00 a basket,

Question—Can any one give us any information about the May Beauty?

Answer—It is very inferior; rots badly.

ELECTION OF OFFICERS.

Mr. J. Webster was elected President to succeed himself; on motion of Mr. Stanton, the Secretary was authorized to cast the ballot for Mr. Webster. The same motion was made and prevailed in the election of Mr. J. W. Stanton for First Vice-President, Mr. L. N. Beal for Second Vice-President and Mr. W. E. Gallener, of Vienna, for Third Vice-President. The President was instructed, by motion, to cast the ballot for Mr. Mendenhall, for Secretary and Treasurer.

An invitation from Vandalia to the society, inviting them to hold their next annual meeting at that city, was at this time presented to the society.

Mr. Beal—I move that this society accept the invitation to meet at Vandalia, and meet in that town next year. Motion carried.

REVISION OF FRUIT LIST FOR SOUTHERN ILLINOIS.

APPLES—For farmer's orchard.

Summer—Red Astrachan, Early Harvest, C. R. June, Sops of Wine, Benoni, Cornell's Fancy, Jeffries, Sweet Bough, Keswick Codlin.

Fall—Maiden Blush, Grimes' Golden, Lowell, Jonathan, Mother, Ramsdell's Sweet.

Winter—Ben Davis, Minkler, Rome Beauty, York Imperial, Winesap, Rawles' Janet, White Pippin.

APPLES—For market.

Summer—Yellow Transparent, Sops of Wine, Benoni, Duchess of Oldenburg, Jeffries, Early Pennock, C. R. June, Sherwood's Favorite.

Fall—Lowell, Jonathan, Grimes' Golden, Pennsylvania Red Streak.

Winter—Ben Davis, Minkler, York Imperial, Winesap.

PEARS—

Tyson, Bloodgood, Osborn Summer, Duchess, Clapp's Favorite, Bartlett, Howell, Sheldon, Anjou, Easter Beurre, Winter Nellis, Vicar of Winkfield, Keiffer, Koonce, Clargeam.

PEACHES—

Mountain Rose, L. E. York, E'y Barnard, Ede, Elberta, Stump, Old Mixon (free and cling), Chairs' Choice, Stevens' Rareripe, Red Heath, Wilkins, Smock, Ward's Late, Thurber.

CHERRIES—

E'y Richmond, Montmorency, Wragg, English Morello.

GRAPES—

Winchell, Norfolk, Worden, Niagara, Goethe, Norton's Virginia, Cynthiana, Lindley, Wilder, Woodruff Red.

BLACKBERRIES—

Early Harvest.

RASPBERRIES—

Red—Turner, Brandywine, Hansell.

Black—Souhegan, Eureka, Kansas, Gregg, Palmer.

GOOSEBERRIES—Houghton, Downing.

CURRANT—

Wilder, Red Dutch.

STRAWBERRY—

Beder Wood, Michael, Crescent, Bubach, Haverland, Warfield, Lovett, Lady Thompson, Gandy, Bisel.

J. W. STANTON,
J. W. FULLER,
GEO. GOULD,
Committee.

DISCUSSION.

MR. REIHL—I object to a part of that list, myself. It would be well enough to be known why I object. There is, in the corrected list, two grapes that are very similar; why did you want them? Certainly not for market, because they don't sell. You will only want for one family, so you don't want both of them; don't want two varieties of that class of grapes.

MR. MCCAFFREY—In regard to strawberries. As to the Michael, it is all right for the garden, but for a commercial strawberry it is not good. I think the Michael is all right for the garden, but for the market it is a detriment to all strawberry growers.

THE SECRETARY—If we go on to discuss that long list clear through it will fill a volume. I would suggest that the committee add to this list instructions to the readers to inform themselves what is best for their locality, stating that this covers the whole field of Southern Illinois. There are strawberries in there that would not do on my place that would do in other places; and the same will apply to other fruits. I think that this paper should be referred back to the committee.

Motion, by E. G. Mendenhall, that the list be referred back to the committee for the purpose of informing the public that this covers the whole territory of Southern Illinois, and that they must be governed a great deal by the locality and information that can be gathered from successful growers. Motion carried and committee reported as follows:

We are aware of the fact that a portion of this list will not meet the requirements in every locality in the southern district, and some kinds of fruit will not answer for some localities, whereas the same variety will be very successful in other places, therefore persons wishing to set fruits should consult as to the best varieties adapted to their peculiar neighborhood. COMMITTEE.

PREMIUMS AWARDED ON FRUITS EXHIBITED.

REPORT OF COMMITTEE ON APPLES.

The exhibit of apples is as good or better than is usually made by this Society. Fruit of good quality and in good condition. The majority of the varieties poorly colored, which we attribute to the season. All things considered the exhibit is better than we expected to see.

R. REDDEN,
J. C. B. HEATON,
T. B. REYNOLDS.
Committee.

Your committee on pears and quinces would submit the following report:

PEARS.

The exhibit of pears is not equal to that of former years, and with a few exceptions, the specimens were not in first class condition. Varieties exhibited were Winter Nellis, Lawrence, Duchess and Keiffer.

QUINCES.

The exhibit of quinces is the largest and best for this locality and season that the Society has ever had. The fruit is smooth and well preserved. The varieties exhibited were Orange, Rea and Meach's Prolific.

E. R. JENNETTE, Anna,
JOHN MCCAFFREY, Cobden,
J. T. MOGELY.
Committee.

NEW FRUITS.

There were but three exhibits of new apples: Paragon, Ingram and Salome. All of which are good fruits in quality.

Taking the specimens before us, we have given first premium to Paragon, but wish to throw out the caution to planters ttha so far as fruited the indications are that it will not prove a profitable variety, owing to the fact that the fruit drops badly in some localities.

Ingram, to which we have given second premium is a seedling of Rawles' Janet, much like its parent in shape and quality, and so far as heard from the character of the tree, as to growth and productiveness, is all that could be desired.

Salome, were good specimens, somewhat lacking in color, a fruit of good quality, productive, but very subject to insect attacks.

PEARS.

There was but one entry of new winter pears, which was by C. H. Webster, of Centralia. Variety, no names, but supposed to be Horn's Winter. Not of high quality, but not a bad pear, and from appearances, is a truly winter pear that will keep into January as grown in the vicinity of Centralia.

In lot 38, best plate; new pears; good enough to be recommended. There was also but one entry; variety, not named, by J. W. Fuller; not known to be a new variety, and may be some old variety.

E. A. Riehl,
J. W. Stanton,
R. A. Simpson.
Committee.

AGGREGATE AMOUNT OF FRUIT SHOWN AT VIENNA MEETING.

Total number of plates of fruit shown at Vienna were:

Apples—Ben Davis, 15; Willow Twig, 5; Rome Beauty, 8; Jonathan, 8; Minkler, 7; Fink, 5; Grimes Golden, 5; Wine Sap, 15; Janet, 9; Winter May, 10; Pryors Red, 2; York Imperial, 5; Walbridge, 1.--Total, 95.

Quinces—Four varieties, twelve plates.

Pears—Six varieties, ten plates.

Owing to the long dry summer and fall vegetables were left out of the premium list.

G. W. Endicott, of Villa Ridge, placed on exhibition an immense specimen of a turnip, which was cooked and served up at the hotel for dinner the second day, there being plenty to go around.

On motion the President and Secretary were appointed delegates to the Omaha convention of Horticultural Societies to represent this socity, provided, that it did not cost this society anything. Carried.

"IMPROVED METHODS OF MARKETING FRUITS."

J. W. Stanton, Richview.

This subject is very interesting to me. and I presume to many present. We have found, with all the progress made during the past few years in the methods of marketing fruits, there is still room for improvement. I need not call your attention to the comparison of past and present methods, but my task, I presume, is to suggest an improvement on existing methods. We are now marketing large crops of fruit through the shipping association and in most cases, satisfactorily to the grower. the results are quite an improvement over the individual shipments, fruit is handled better by the transportation companies and the small shipper receives just as much for his products as larger growers. I think, however, the time has come when our shipping association must adopt and enforce strict rules of grading fruits of all kinds. The large acreage of fruit will sometimes produce such crops that without proper grading it will be impossible to obtain paying prices. I have never known the markets so glutted that first-class fruit would not bring fair prices. I believe the shipping associations of Southern Illinois should organize and establish a bureau of information at Chicago for the purpose of rendering proper aid to the several associations. by means of market reports, transportation services, looking after consignments in hands of commission merchants, and many other matters that our shipping association would find of great value. I am aware of the fact that there would be some difficulty in getting such bureau in satisfactory working order, but we found the same difficulty in our shipping association, and I am confident the plan would finally work and prove very satisfactory in results.

We have just closed our apple packing season and prices have been fair. In handling apples this fall I bought a lot in barrels to be repacked, when I saw how apples were being put up at different places in Southern Illinois, I felt that there was certainly room for an improvement in their methods. We must put up good fruit in a neat full sized

package, the style of package to be according to the trade requirements. I saw parties buying for an Ohio cold storage house this fall, who have what seems to be a new feature in cold storage, they have storage arranged for bushel boxes in tiers, when a retailer wants a few bushel for his trade, they send the boxes, and when boxes are empty they are returned and placed in position for next season. In buying for this storage there is no expense for barrels and also quite a saving in freight.

DISCUSSION.

MR. GALLENER—A great many apples are picked before they are ripe and put on the market and this affects the market.

MR. STANTON—Buyers are largely responsible for that. I undertook to buy a car load of apples down the road. I repacked the apples, and I had to buy two hundred and sixty odd barrels of apples to get one hundred. The buyer that bought those lost about 50 or 60 cents on every barrel; I didn't make anything. I asked the gentleman who bought these apples how it was that so many inferior apples were among them. He said that he bought them as they run; everything in the orchard, and everything that was in the orchard was in the barrels. As long as buyers will buy in this manner, of course, we will have that kind of packing. For that reason, I insist that the grading part is a very important thing. It will be more so. It will be a question of quality more than a question of quantity. If we have an excellent quality of fruit and put it on the market, we are sure to get good money for it. If we could only get the people to understand that it won't do to put that kind of fruit on the market, then they would not sell to buyers in this manner. Another reason this comes up every year is that there is a new lot of buyers who have got to be educated. They are followed by another lot the next year and they go in to buy just every way, and the result is that the legitimate buyer that wants to buy to the best interest of all mankind can not do anything.

SPRAYING.

J. C. Blair, Assistant Horticulturist, State Experiment Station.

I am very much pleased, indeed, to have the pleasure of meeting so many of the members of the Southern Illinois Horticultural Society and so many of the fruit growers of the southern counties of Illinois.

I have come down here, not so much to talk to you or to make an address, as to bring along with me a spraying apparatus with which I could demonstrate how spraying is done in a practical way. I was here last summer and stayed at Vienna a few days, and in talking with many of the fruit growers of this region found that some were not acquainted with the operation of spraying. I tried to tell them that it was a simple thing, but being unable to satisfactorily explain the matter by word of mouth, I promised to come down here this fall and give a practical demonstration. So to-morrow morning we will meet at the hotel, where we can talk about the subject of spraying, and I will be glad to answer any question touching on the subject that any one may ask. You must realize that I have had considerable experience with it, and so do not look at it so much from a teacher's standpoint as from that of practical use.

Having said so much, I think you will pardon me if I launch off into the scientific phase of the question, speaking more particularly of the general uses, remedies, etc.

Spraying, as we understand it to-day, is an operation of the fruit grower's that has come to stay. It has come because it is the only successful way in which we can combat many of the insect enemies of the trees. With the increasing existence of insects year by year it becomes important that horticultural people should understand some of its uses. I have a chart here which I will use. There are three general types of spraying formulas, the first of which includes those used in combating insects. For the insects which chew their food we use these formulas (reading from chart):

1. Paris Green Solution.
   Paris Green..... 1 pound
   Water, 150 to .....300 gallons

2. London Purple Solution.
   London Purple.... ..... 1 pound
   Water, 150 to.....300 gallons

3. Hellebore Solution.
   White Hellebore.....1 ounce
   Water.....3 gallons

The other type of insects which we have includes those that take in their food by means of sucking, so for them we use a different solution, which is caustic in its nature. (Reading from chart):

1. Kerosene Emulsion.
   Soap (hard).....½ pound
   Water (hot).....1 gallon
   Kerosene oil.....2 gallons
   (Emulsify and dilute 4 to 25 times in the water.)

2. Whale Oil Soap Solution.
   Whale Oil Soap ½ to.....2 pounds
   Water.....1 gallon

Now, then, the third type of spraying solutions. After insects the second great class of enemies to fruit trees are the fungus diseases. The great remedy for these is the following solutions, the bordeaux mixture (reading from chart):

1. Bordeaux Mixture.
   Copper sulphate.....6 pounds
   Quick Lime.....4 pounds
   Water, 40 to.....60 gallons

2. Ammoniacal Copper Carbonate.
   Copper Carbonate.....1 ounce
   Water.....9 gallons
   (Ammonia to dissolve.)

3. Copper Sulphate Solution.
   Copper sulphate.....1 pound
   Water.....15 gallons

The third distinct class of enemies to fruit is that of bacterial diseases. They are not often noticed by the fruit grower until they have done some injury, and there is no remedy for them but to cut off the diseased portion.

In the first place we must remember that spraying is only one of the requisites for fruit growing. I would not advise a man to spray unless he understands fruit growing. It has been said by many horticultural people that the operation of spraying is the only sure means of getting a crop. That would be true if the trouble were only occasioned by insects or fungus diseases. It is not, however, the first essential of fruit raising. Tillage is first in importance, fertilizing next, pruning next, and then spraying. We must have a good, healthy growth of the plant before spraying is of much advantage.

Secondly, spraying is an insurance. No man expects his building to burn down, but he insures against the possibility of such an occurrence. It is only every three or four years that an injury comes to our fruit crops by reason of disease, yet we spray as an insurance against the possibility. This

fact was well illustrated in the fruit crop in New York in 1894, which was the year when a fungus disease did so much damage in that state. Those who had sprayed could see the direct results of their foresight.

In the third place, spraying is of some value every year upon apples, pears, plums, peaches and grapes, for the purpose of killing those insects which are more or less abundant every season.

The next point that I want to emphasize is this: If we are going to spray at all we must spray thoroughly. Probably one-half of the spraying operations carried on in this region, in Michigan, New York and Illinois, are of no use for the reason that they do not comply with this rule of thoroughness. That is to say, if we are spraying for an insect that feeds by chewing we must be thorough with the use of the paris green. Spray every portion of the tree thoroughly. The one spot that is not touched may be the very place where a bug is at work.

The fifth point: We should prepare for our spraying operations during the winter months. It requires an entirely different outfit for the spraying of large trees from that used on small ones; and, if we have to build ladders or a platform on the wagon to allow us to reach up into the trees, let us do it when we have the time to spare. In the spring we are all busy, and when the time comes to spray for some insect or fungus we must be prompt. If we have everything ready and in good working order, we can go to work without loss of time.

The style of pump and nozzle depends entirely upon the kind of work to be done. If we are going to spray large trees we must use a force pump with sufficient force to enable us to throw a spray against the branches and leaves—one that is large and powerful. Speaking of nozzles, let me give you the elemental requisites of a good nozzle. It should have accuracy and carrying power, so that it will throw where we want it to, and also be one that will distribute the solution well. The pump, for whatever kind of work, should be strong, and should also have hard brass working parts to avoid corrosion.

The seventh point that I wish to mention, and by far the most important one connected with the subject, is that the farmer or fruit grower should know what he is going to spray for. I have met men who were spraying for—well, because they had heard it was a good thing to spray and they thought it the proper thing to do. I have seen people who were using

fungicides and trying to kill insects with them, and others who were spraying with insecticides for fungus diseases. If we are going into this business at all, let us go at it understandingly. First find out the nature of the trouble, then the best means for combating it.

The time for spraying must depend entirely on the nature of the trouble, and must be determined for each individual case. If you are going to spray, have your solutions prepared a little ahead of time, so that you may be ready when the time arrives and be prompt in their application. Finally, let me again impress upon your minds the importance in spraying of a knowledge of the purpose of the operation in each particular instance, of thoroughness in the application and of being on time.

The operation of spraying, as mentioned before, is one of the gardening operations which has come to stay. The fruit grower who habitually sprays his plants with a knowledge of what he is doing it for knows the condition of the plants constantly, he is always on the lookout for insects or diseases, and he is the man who is going to get ahead of these enemies of the vegetable kingdom and to make fruit growing pay.

I think I have said enough about this matter of spraying to let you know my estimation of the place it holds, or should hold, in fruit growing. I would like to see more of it done in Southern Illinois, where I am confident its wider application would be of great value to horticultural interests. There are many books that will assist you in looking up this matter further; notable "The Horticulturists Rule-Book," by Prof. L. H. Bailey, and "The Spraying of Plants," by E. G. Lodeman, both published by the Macmillan Company, of New York.

In conclusion let me say that I want you to feel that I am a public servant in the horticultural work, and while I am here I will be very glad to talk with any of you and answer questions or help you in any other way that I can.

DISCUSSION.

QUESTION—What do you do for rust on melons?

ANSWER—I have had no exnerience with it myself, but I know of gentlemen who have tried the Bordeaux Mixture with, however, only partial success.

QUESTION—Would it do to soak the seed in the solution, do you think?

ANSWER—I wouldn't soak the seed in Bordeaux Mixture. A solution of copper sulphate, one pound with two gallons of water would probably kill it.

MR. GOODRICH—I would like to ask you, Professor, in regard to blackberry rust. Is it too deeply seated to be destroyed?

ANSWER—I have had no particular experience with rust, Mr. Goodrich, but from what writings there are on the subject I believe that it is the result of the location. I would try not letting the plants stand too long in one place. Frequent rotation must be practiced. Give the plants an abundance of light and air by broad planting. Spraying has never been thoroughly successful with this disease, but if we spray before the buds swell, with sulphate of iron and later with Bordeaux Mixture or ammoniacal corbonate of copper it should hold the disease in check.

QUESTION—Would you take the plant and attempt to kill the rust before it is set?

ANSWER—It might be done by taking the plant and dipping it in a solution of copper sulphate. I would not have the solution quite as strong as for the melons, say one pound to four or five gallons of water.

"THE FUTURE OF HOTICULTURE IN SOUTHERN ILLINOIS."

HON. THOS. H. SHERIDAN, Vienna.

Ladies and Gentlemen:

I have no paper to read. I am a little in the fix that the minister was, when he got up before his congregation and announced that he had left his manuscript at home and that he would have to do the next best thing, and that was to depend upon the Lord.

I am not a practical horticulturist. I am very sorry, indeed, that I have not been able to attend every session of this society; but, having been tied up in court.

This year, I had in about sixty acres of timothy which made about one and one-half tons per acre. That is a pretty good yield for that sixty acres. Timothy is worth about $6.00 per ton. That makes about $9.00 an acre for land

seeded in timothy. One hundred acres of corn will yield, perhaps, not exceeding fifty bushels per acre: fifty bushels of corn at twenty cents a bushel is $10.00 per acre as a corn crop. Forty bushels of oats per acre at fifteen cents per bushel makes $6.00 per acre for an oat crop. Twelve bushels of wheat per acre; twelve bushels at seventy-five cents per bushels—that is, perhaps, the average price—makes $9.00 per acre for a wheat crop. Hogs three cents per pound, the average price. I cannot think, ladies and gentlemen, of a crop that brings to us an income of more than $10.00 per acre for our land; and the value of this land is from $5.00 to $50.00 per acre, to say nothing of the expense of cultivating, gathering and harvesting. Shall we proceed to cultivate and raise nothing but corn, wheat, oats, hay, and hogs, or shall we take advantage of our splendid soil and make this section of Illinois the Italy of America, or shall we allow it to remain the Egypt of America?

Three things are necessary for successful horticulture: First, markets; second, soil; third, climate. These three things are indispensable. I want to say to you, now, that the farm products that I have been raising are the same products that other farmers of this county have been raising. My experience is your experience as to farming. It has been all that Lawyer Sheridan could do to keep Farmer Sheridan and Horticultural Sheridan alive. It takes all the money that Lawyer Sheridan can get to keep Farmer Sheridan and Horticultural Sheridan.

Now, those three things that are necessary for successful horticulture—markets, soil and climate: First, have we the markets here in Southern Illinois, or are the markets accessable to us? Are transportation rates reasonable enough to induce us to embark in this horticultural enterprise? Transportation is reasonable. The market, then, we have right with us. The whole state, and our neighboring states, is dotted with cities which are accessable. We have the market. That is one of the indispensable requisites. We have got it.

Have we the soil? The black, deep soil of Northern Illinois is splendid for the production of corn and wheat, and grass; when it comes to the cultivation of apples and peaches in great varieties, they don't compare, at all, with the splendid land that lies in Southern Illinois. We have the soil. The strawberries from this section; the apples, pears, peaches and smaller fruits from this section, in the exhibits of Illinois beside fruits from other states, compared very favorably, in quality, with the fruits from any state in the Union.

We have the market; we have the soil; we have the climate. The latitude of this section compares with the latitude of

Italy, in Europe. Climate, soil and market; we have them all. What do we need, then? We need men equipped for the business; we need men who understand horticulture in its advancement and, in the future years, Southern Illinois will be the Italy of America. We will have it in this country so that the farmers can, with the products of their apple trees, their peach trees, and the products of their smaller fruits, pay off the mortgages that have been placed there by the constant raising of corn, wheat and oats.

I am glad, indeed, that Professor Blair took so much time upon the question of spraying, because these things are of great importance to the horticulturist. I express a great dissatisfaction on account of not having been able to be in these meetings.

I am going to set out forty acres of apple trees, twelve acres of peaches and, I think, in a few years, when these trees begin to bear, that Horticultural Sheridan will be able to keep up Lawyer Sheridan.

VARIETIES OF APPLES ADAPTED TO NORTHERN HALF OF SOUTHERN ILLINOIS.

E. G. MENDENHALL, Kinmundey.

It was expected to have had this subject handled by the member whose name appears on the program, but at the last moment it was declined as the party could not be here.

We find in Vol. 30, for 1896, a list recommending apples for the southern district of Illinois of which this Society is the representative body—you find the list designated for a farmer's orchard, then again for a commercial or market orchard.

In the farmer's orchard you are advised to use of ten varieties for summer, for fall eight, and for winter nine varieties. As there is a request from the State Society to again revise the list for 1898, there is, or has been a committee appointed for that purpose, and I think it would be wise to select men who are well posted on apples and divide the territory into the north and south half of the southern district.

There is no doubt a difference in the sections as to what is best in each. As this committee will act as to the naming varieties, I shall not attempt to do so, as the committee in its report and acceptance by this society will be broader and better.

The list for 1896 gives for market four varieties, for summer three, for fall three, and four for winter. My opinion is that if the farmer's list was reduced to about the same amount of varieties it would greatly simplify matters for them when selecting from the official list of this Society.

The Ben Davis, while not bringing top prices, is still the apple for money making, for it bears early in life, and with good attention, bears more regular than any other and for many years, it is to my thinking the best all round apple we have. However, the Jonathan is to the front now, and from the outlook, the rush is such that there will not be a surplus tree left when next spring setting is through with. The Jonathan is a splendid fruit and commands the highest price at all times; with less work and smaller amount of fruit you can make the same money perhaps as you can with the Ben Davis Those who have had experience side by side in the same orchard can answer to a certainty.

Grimes Golden will probably sell equally as well as Jonathan. I have not fruited it.

In the apple belt along the B. & O. S. W. railroad the Ben Davis and Jonathan are grown largely. The Minkler and Grimes Golden follow. This year I had some Akin, York Imperial and Mamouth Black Twig in fruiting, and am pleased with them. In looks the Akin will closely follow Jonathan and have the advantage of being a long keeper. I had expected to have seen some one here from about Olney who could give us facts and figures as to the Akin apple; that section is its home.

OLD AND NEW VARIETIES OF PEARS.

J. Webster, Centralia, Ill.

The craze for planting pear trees was the outcome of such large quantities of LeConte pears being planted in Georgia and other southern states, and a vast quantity of Keiffer pears being planted in Illinois, Missouri and other central and western states. It has at last partially subsided, and now after ten years a more normal condition in pear tree planting prevails. The Keiffer has now been fruited in several states in sufficient quantities to be shipped to market in car load lots; wholesale and retail dealers are begining to understand its good and poor points. It has apparently come to stay longer than some of more recent introductions. The blight proof pear has not arrived except on paper. The Keiffer and Garber promised so much in that direction, but

notwithstanding their aristocratic appearance and origin it has already began to go the way of all the more humbler bred varieties of American pears. Among the many cataloged by American nurserymen in the past fifteen or twenty years of evolution, scarcely two points are gained. To-day we have nothing that we can with any degree of certainty say is blight proof. Scarcely one variety has developed any very marked improvement, more than a vigorous wood growth and thick foliage. Over Howell, Bartlett, Onandaga, Anjou, Sheldon, Duchess, Lawrence and others that I might name. The glimmering ray of hope held out to us in the Lincoln and Henry pears of recent introduction is only in size, form and quality of fruit, and not in being exempt from the deadly blight. This will probably be left for others to attain after we have passed away.

Of the recent introductions that are doomed to soon disappear from the catalogues of Illinois tree growers, are the Lawson, a poor tree and poorer fruit. Idaho is one of the worst to blight. LeConte, Jefferson and Early Harvest are vigorous trees all of them. The two last named are early and very free from blight, but can not be classed as good market pears. The Chambers Hybrids are poor in quality and must give place to something better. The Clapps Favorite and Anjou are grand pears in some respects and vigorous trees, but the trees of both are subject to blight, and the fruit to quick decay, and are on that account very liable to disappoint the grower should he succeed in growing and sending to market.

New York growers can bank on the Anjou; it is their corner stone on which they build, but our observation and experience both teach us that for the prairies of Southern Illinois, Sheldon, Onandaga, Buffum and Lawrence, of the older kinds, will show older and larger trees that have been and still are profitable, and are better adapted over a wider field. In Southern Illinois, Burre Hardy, Burre Superfine, Josephine Malines, Louis Bonne de Jersey, were grown with us, are often lacking in the qualities that are required of a market pear. The same may be said of some others, including the Seckel, which, when properly grown, is the standard of excellence, but too small always with us to be profitably grown for market. The Vicar, Winter Nellis, Mt. Vernon and Burre Easter, all have some prominent and peculiar faults, characteristic of the variety when grown with us, beside the fact that none of them are free from blight, that we can only recommend the planting of a few trees of these varieties.

The pears of recent introduction worthy of being classed as fall eating pears are the Lincoln and Henry, both have size and quality to recommend them, but rest assured neither of them are entirely exempt from blight.

Somebody whispers, how about the Suddeth and Koonce? I have not seen any blight on either yet. The Koonce is a little better than any early pear that I have yet formed the acquaintance off ripening that early, and like the Suddeth, is a vigirous tree, but unless thinned, both are liable to be below medium in size, and the least that is said about their exquisite quality the better.

FINAL RESOLUTIONS.

Your committee on final resolutions would make the following report:

WHEREAS, The success of the annual meetings of this society largely depends upon the interest taken by the people of the immediate vicinity; therefore, be it

Resolved, That the thanks of this society are hereby tendered to the citizens of Vienna and vicinity for the hospitality so generously extended to our members, and for their interest in and attendance at the meetings; for the commodious hall, furnished for our meetings; to the young gentlemen and ladies for the excellent music furnished for our entertainment; to the proprietor of the Perkins Hotel for courteous treatment; to the railroads for reduced rates given to our members.

E. R. JENNETTE,
J. W. FULLER,
L. N. BEAL,
Committee.

PROCEEDINGS

OF THE

THIRTY-FIRST ANNUAL MEETING

OF THE

HORTICULTURAL SOCIETY

OF

NORTHERN ILLINOIS.

Held at DeKalb, Illinois, December 1 and 2, 1897.

Reported by the Secretary,
DWIGHT HERRICK, Rochelle.

OFFICERS FOR 1898.

PRESIDENT.....J. L. HARTWELL, Dixon.
VICE-PRESIDENT.....H. R. COTTA. Freeport.
SECRETARY.....DWIGHT HERRICK, Rochelle.
TREASURER.....L. WOODARD, Marengo.

LIST OF MEMBERS.

LIFE MEMBERS.

Gaffey, A. M		Woosung.
Kaney, Thomas		Foreston.
Parker, Francis M		Station O, Englewood. Chicago.
Swigart, Roy	Farmer	Dixon.

HONORARY MEMBERS.

Read, L. H		Grand Rapids, Wis.
Toole, William		Baraboo, Wis.

ANNUAL MEMBERS.

Buffet, J	Small Fruit	Dixon.
Berger, N. C	Small Fruit	Polo.
Braiden, M. J		Rochelle.
Brayton, A. W		Mt. Morris.
Barnard, O. W	Farmer	Manteno.
Bryant, L. R	Orchardist	Princeton.
Bryant, A	Nursery	Princeton.
Brown, Chas	Small Fruit	Ashton!
Cotta, J. V	Nursery	Nursery.
Cotta, H. R	Nurs'ry & Small Fruit.	Freeport.
Cusson, J. L	Small Fruit	DeKalb.
Dresser, J. D		DeKalb.
DeLand, G. M	Orchardist	Dixon.
Friend, J	Farmer	Nekonia.
Fursman, E. S	Farmer	El Paso.
Gurler, G. H		DeKalb.
Hunt, D. D		DeKalb.
Hartwell, J. L	Nursery & Small Fruit.	Dixon.
Herrick, Dwight	Potatoes & Sm'l Fruits.	Rochelle.
Hey, Chas	Farmer	Rock Falls.
Joiner, Alvin	Farmer	Polo.
Keifer, J. Frank		Sterling.
Keeler, J. B		Meridian.
Kliber, Geo		DeKalb.

Lattin, L. B.		DeKalb.
Lawton, Fred	Farmer	Dixon.
Mathewson, O. W.		DeKalb.
Noble, E.	Farmer	Elva Station.
Powell, C. R	Small Fruit	Sterling.
Prescott, C. W.		Marengo.
Piper, D. J	Small Fruit	Foreston.
Strubler, Phil.	Gooseber'i's & Cur'nts.	Naperville.
Swezey, A. J.	Farmer	Rockford.
Scott, Philip	Farmer	Rock Falls.
Thompson, J. I.		Somonauk.
Ulm, Lewis	Farmer	Sterling.
Wyman, B. F.	Farmer	Sycamore.
Whittlesey, W. E		Joliet.
Woodard, L.		Marengo.

PROCEEDINGS

OF THE

THIRTY-FIRST ANNUAL MEETING

OF THE

Horticultural Society of Northern Illinois.

Held at DeKalb, Ill., December 1 and 2, 1897.

The Society was called to order Tuesday, December 1, at 9:30 A. M. by President J. L. Hartwell.

Exercises were opened with prayer by E. S. Fursman, of El Paso.

SECRETARY'S REPORT.

DWIGHT HERRICK, Rochelle.

One of the leading objects of this society, as I understand it, is to interest the farmers of Northern Illinois in the matter of growing fruits for their own use. And it is upon this subject that I would like to present a few thoughts which have occurred to me since our last meeting. In Southern Illinois there are probably a great many professional fruit growers, but there are not so many in Northern Illinois.

If you could induce the farmers to attend our meetings I am sure we would be able to interest them in the subject of horticulture. The great difficulty is to get in touch with them and bring them in contact with our meetings. I have found it difficult to get them interested sufficiently to attend our meetings or lend us any help. I have thought that if we issued an increased number of programs—had them printed and circulated through the district schools in the territory for a radius of five or six miles or more around our place of meeting—that such a plan would result in bringing the attendance of the farmers directly to the meeting. I should have tried that this year if I had had the time and the authority to do so. If you can get the children interested in some such way as this I am sure the older folks will take an interest and attend the meetings. The programs are printed in the newspapers, but the premium list is not published. Our list of new members ought largely to come from the location where the meeting is held, and to bring them in we must get our premium list out among the farmers.

We cannot do this successfully unless we go at it systematically and have some one go into the surrounding territory and make a business of the distribution of the papers. The getting of children interested in horticulture is one of our principal objects, and I think that can be done in the same way by distributing the programs through the schools.

Discussion of Fruit Condition in Northern Illinois.

Mr. O. W. Barnard, Manteno—We have had this season a fine crop of apples in our section of the state, so far as quantity is concerned, but the quality was not good. The winter apples matured very early, really becoming fall apples, and as a result they decayed early. We are not in the apple growing business in a commercial way at all, but raise apples for our own consumption. I lay the decay of the winter apples to the extreme heat which occurred in the latter part of the season. The apples, in some instances, were cooked on the trees, many of them fell on the ground and were baked in the hot sunshine in September.

The strawberry crop was a good one. Raspberries were a fair crop. Our potatoes were a light crop. There have been

shipped into our station five carloads from Wisconsin and Minnesota. The price ranges from fifty to sixty-five cents. The first carload was sold for fifty-five cents.

I don't know of anybody in our county who is devoting his entire time to fruit growing. We go into general farming and dairying. The farmers, however, aim to raise fruit for their own use, and are doing very well in that way. It is not an apple country, but there were thousands of bushels of apples that rotted on the ground this season. The farmers don't seem to be aware of any method of using them, except to eat them at the time they become ripe.

THE PRESIDENT—Were those apple trees that bore so well in old orchards or young?

MR. BARNARD—Both young and old—both bore well.

THE PRESIDENT—Are you planting many young orchards in that vicinity?

MR. BARNARD—Not many. The farmers are receiving and planting some new trees every year.

THE PRESIDENT—Not particularly, outside of our local society. But there are tree salesmen who come through there and sell thousands of dollars worth of trees every year to the farmers—a few in a place. They take them home, and plant them, under the directions of the salesmen. Many times they do not succeed. They are more likely, however, to have fruit if they plant trees in this way than if they do not plant at all.

THE PRESIDENT—Mr. Friend, will you tell us about your locality in Henry county?

J. FRIEND, Nekonia—I come from perhaps as rich corn land as any that lays to the sun in Illinois. My observation is pretty much like that of Mr. Barnard. In my neighborhood they don't devote much time or talent to the growing of fruit. We are planting a great many trees, but are depending on tree agents for our horticultural advancement. We are depending on them too largely for a choice of varieties. We too often yield our choice to the choice of the agent who sells the trees. The result is that we have apples, when we get them, of varieties the names of which we do not know. Gen-

erally the trees bear a kind of apples that we think we did not plant. Our old orchards stand in blue grass sod, consequently they only bear after we have had a wet season, and then they overbear. The fruit is inferior, from overbearing. There are no commercial orchards in the county where I have traveled about. People plant from six to ten acres at a time. We are planting a great many peach trees, but most of them are seedlings. We are experimenting a great deal with pears. I have sixteen varieties of pears, possibly fifteen or sixteen varieties of apples and a great number of plums and grapes. Our orchards are generally neglected. They stand in the blue grass sod, and are used for calf and colt pasture. They are entirely neglected so far as cultivation is concerned, hence when we get a crop of apples it is because we have had excessive moisture. It takes heavy rains in order to give the trees a drink. We don't plant fall apples; but we depend on the tree peddler, and he gives us our fall varieties. We have to depend on the market, usually, for a supply of winter apples. The apples grown in the neighborhood do not begin to supply the demand for winter apples.

MR. BARNARD—Has any one anything to say with reference to new varieties of apples?

MR. READ, of Wisconsin—Wisconsin is noted for its seedling apples. I wish to speak now of an apple which we had on exhibition at our last winter's meeting. It is an apple which has not been tested to any extent. It is, I believe, the handsomest apple I ever saw. To picture it, you may imagine the handsomest Fameuse or Snow apple that you ever saw—the brightest and most brilliant red—and then when you eat it, the flesh has the appearance of the Snow apple, and the taste of the sweetest and finest sweet Fameuse. It is known as the sweet Fameuse. It originated a little west of Oshkosh.

THE PRESIDENT—Is its parentage known?

MR. READ—Only as might be supposed, from the name.

MR. BARNARD—Is it hardy?

MR. READ—So so far as is known from its experience, it is hardy there near its home.

AFTERNOON SESSION.

The president appointed the following committees:

Committee of Award on Fruits—Arthur Bryant, of Princeton; J. Friend, of Nekonia, and William Toole, of Baraboo, Wisconsin.

Committee on Vegetables—Lewis Ulm, of Sterling; A. J. Sweezey, of Rockford, and G. N. De Land, of Dixon.

Committee on Resolutions—O. W. Barnard, of Manteno; Philip Scott, of Rock Falls.

Committee on Treasurer's Report and Auditing—L. R. Bryant, of Princeton; Charles Hey, of Rock Falls, and H. R. Cotta, of Freeport.

Upon motion of Mr. Toole, President J. L. Hartwell, A. Bryant and H. R. Cotta were constituted a committee to act in conjunction with the Southern and Central and State Societies for the purpose of interesting the State Teachers' Association in the question of Horticulture.

SHALL THE ORCHARD BE ALLOWED TO GO TO GRASS?

H. R. Cotta, Freeport.

This is not a question to be solved by the successful commercial orchardist. It is not a question to be solved by the peach growers of Michigan. It is not a question to be solved by the orchardist of California. It is not a question to be solved by the men who produce the thousands of carloads of orchard fruits that are annually shipped from other sections of this country into the borders of the jurisdiction of this society and consumed by the people of Northern Illinois. It is not a question to be solved, I say, by the fruit growers who annually receive hundreds of thousands of dollars for this fruit, but it is a question to be solved by those whose business it has been to grow corn and cattle, by those who own the fertile lands, the broad acres of Northern Illinois, by those whose time and thought have been taken up with other affairs. By the people of Northern Illinois, it is to be solved.

Farmers in certain other localities with a peculiar soil, when their crops of grain were not sufficiently renumerative to keep even their necessary expenses for a number of years,

have found that by intense cultivation and close application to the details of the business, their soil would produce bountiful crops of fruit, and they are now reaping the benefit of this knowledge.

Land which produced from three to eighteen dollars worth of grain per acre, is now producing from fifty to two hundred dollars worth of fruit. Many have already paid off their mortgages, and have a surplus.

Now, let us consider the difference between an orchard that has been allowed to go to grass and one that has received thorough cultivation.

The effect grass has on an orchard is to receive and absorb all the light rains, and part of the heavy ones. It absorbs the moisture in the soil within two feet of the surface; it checks capillary action and absorbs much of the fertility in the soil, all of which belongs to the orchard, and is needed by it. This alone will soon cause the orchard to loose vitality, to become weakened and stunted. The fruit will be smaller, it will not develop properly, and will not mature properly. As a result the fruit will lack in flavor. The trees, weakened, will grow very slow, will be easily injured by severe winters, and when injured, will not be able to outgrow and overcome the injury, as will trees in a vigorous condition. This alone is sufficient reason for keeping every spear of grass out of an orchard.

You will also find that the grass affords excellent protection and breeding places for field mice and rabbits, and myriads of injurious insect enemies. Spraying will be of little use in an orchard that has gone to grass.

On the other hand, an orchard of good healthy trees of hardy varieties, if set in good soil which has been cultivated at least one year previous to setting, or has been in clover a short time, and is in a friable condition, if properly cultivated during the fore part of the season to give the trees a vigorous growth from the very start, then seeded to buckwheat, receiving such treatment each season until the trees begin to bear, will be in quite a different condition. After the trees begin to bear, the buckwheat should be discontinued, and the orchard should be sowed to clover and cultivated alternately, and after bearing full crops the soil should be manured to keep up the fertility. An orchard treated in this way will make a rapid growth from the very start. The trees will soon form large spreading tops, sufficient to produce large crops of fruit. When the time comes for them to bear, instead of bearing a peck of indifferent fruit, they

will produce two to six bushels each, of large, smooth, rich flavored fruit. If spraying becomes necessary, it can be easily done, as there is nothing to interfere with the work.

The best young apple orchards that I have ever seen are in Ogle county, and each contain eighteen acres. They have been treated in this way for seven years. Early in the spring the ground is loosened up with a disc-harrow, running both ways; later with the eagle claws, running both ways, which is generally repeated once: then the ground is sown to buckwheat, and harrowed both ways. The owners tell me that their buckwheat in those orchards netted them more clear cash per acre than the small grain from any other part of the farms.

A few weeks ago I had the pleasure of visiting Mr. R. Morrell, of Benton Harbor, Michigan, and his peach orchards of ninety-five acres. Mr. Morrell growes a crop of something else in his peach orchards the first and second years, after which the ground is left entirely to the peaches. This year he had a number of acres or musk melons in his young peach orchard.

Now, it all depends on what you are growing your orchard for. In these orchards thorough but shallow cultivation is begun early in the spring and continued until August. Much of the cultivation is done with the harrow and breed weeder. Mr. Morrell has also a number of acres of pear and plum orchard.

If you are growing an orchard for the caterpillars, borers, codling moths, bark lice, scale insects, wolly aphis, green aphis, tree crickets, canker worms, grasshoppers, curculio, slugs, mildew, scab, mice, rabbits, goats, sheep, calves, hogs, colts etc., you will let it go to grass.

If you are growing it for the fruit it is able to produce, for apples, pears, plums or cherries, you will see to it that it does not go to grass.

DISCUSSION.

Mr. Piper—I have not cultivated my young orchard as Mr. Cotta advises, but I have given it a good coat of manure every year since it was planted; and even before it was planted I had the ground well enriched. And I think I have as fine a young orchard as you will find anywhere in our county.

Mr. Barnard—How many years old are your trees?

Mr. Piper—They are of different ages. Some of the trees are not more than four and some are ten years old. I have quite a number of Salome. I planted some Wallbridge, that hardy, iron-clad tree that was going to stand everything. The first winter fourteen out of seventeen of the Wallbridge froze to the ground. I have two trees left and they bear every year. There is one mistake I make; I ought to spray those trees and I don't do it. If I did I would have lots of apples.

Mr. Hay, of Rock Falls—I would like to ask Mr. Cotta what benefit there is in raising buckwheat in the orchard to the trees or the fruit.

Mr. Cotta—The buckwheat helps to pay the expense of cultivating the orchard, and it keeps the ground in good condition in the latter part of the summer. It is not best to cultivate too late. If the ground is cultivated late in the season, when the trees are very young, they are apt to grow too late. If the orchard is seeded to buckwheat the trees will not grow so late in the season, and the buckwheat will keep the weeds down. I am not aware that it is any detriment to the orchard in any way; and it is a benefit in this respect.

The President—I would like to know why it is that buckwheat leaves the soil so loose?

Mr. Cotta—I can't say anything about the reason, but I have seen the ground where buckwheat has grown and I know it is very loose.

Mr. Fursman—About what date do you sow the buckwheat?

Mr. Cotta—I couldn't give the date, but about the usual time for sowing buckwheat.

L. R. Bryant—Is it not exhausting to the soil if kept up every year?

Mr. Cotta—I suppose it is, but that is true with every crop.

L. R. Bryant—But would it not be well to cultivate with something that you can turn under and enrich the soil?

MR. COTTA—In the case I mentioned the soil was rich enough without increasing its fertility. After the trees begin bearing it would be better to put in clover and turn that under, and also enrich the ground with manure. A large crop of fruit exhausts the soil.

MR. DELAND—I have always been an advocate of raising corn in an orchard. I have several reasons. In the first place it will break the wind from a young orchard and keep the wind from whipping the trees and getting them out of place. Another thing is that the time of tending the corn is the proper time of tending an orchard; and when it is laid by the trees have considerable time to ripen up their wood. When it comes fall you husk your corn, and if you are not too particular there will be enough corn left for the rabbits, and they will never trouble your trees.

THE PRESIDENT—Field or sweet corn?

MR. DELAND—I have always raised field corn. The stalks will protect the trees in the winter. They will retain the snow, and that will protect the trees. I have never had an orchard eaten up with rabbits where there was corn left in that way. There is always enough to feed the rabbits.

THE PRESIDENT—We would like to hear from Mr. Noble, of Elva.

MR. NOBLE—I have got to be a pretty old man, and I have been wondering whether I had been foolish in some of my past experience in orcharding. Twenty years ago I took it into my head that fruit raising in Illinois would be a good thing, and that it would pay. But I must confess that of late years I have become somewhat discouraged in that direction. I went so far as to set out an orchard of 2,400 apple trees about twenty years ago. The first year I set out 800 three-year-old trees. They did very well. The next year I set out 1,000 one year old. They were all grafted in the root except my old orchard, which was an orchard of seedlings. I went so far as to set out 600 Ben Davis. This orchard got to be about ten years old and there came a wind that took most of those apple trees right off by the roots. There was a regular break-down by the wind. Out of my 2,400 apple

trees I now have about 500 left. That discouraged me and I became disgusted with grafting apple trees in the root. After that I had about 150 apple trees that were seedlings grafted in the top, and most of them are good bearing trees to-day. I have about fifty Duchess, and they are the only trees that have ever paid me rent. I have a few fall Swaar. I had about fifty Russet trees and they got tipped over in the wind.

My experience is that an orchard ought not to go to grass. I have been foolish enough to let mine go to grass for the reason that I didn't think it would pay me to cultivate it. I am now satisfied, however, that if I had cultivated what trees I have left I would have better fruit and more of it. So far as that is concerned, if I had another young orchard set out I should be in favor of thorough cultivation. I believe it would be the better policy every time. I have about made up my mind that this climate and our prairie soil is not well adapted to fruit growing. We find that on the Mississippi river and on the lakes and such places they have better fruit. The fact that the atmosphere from the river and the lakes is warmer has something to do with saving the fruit.

MR. FURSMAN—Do you raise any corn on your farm?

MR. NOBLE—Yes, sir.

MR. FURSMAN—If you had given your crop of corn the same cultivation you did your orchard, would you have raised a good crop?

MR. NOBLE—Well; I wouldn't let the corn go to grass. We all know that the more we stir the soil around the corn roots, if you don't stir it too deep, the better is the effect.

MR. L. R. BRYANT—I think the gentleman who has just spoken about cultivating corn has hit pretty near my idea about orchard culture. When you first plant an orchard, for the first few years, crop it profitably with corn or something of that kind that you can cultivate during the same season as you would cultivate for corn. Probably most farmers practice something of that kind. But when the orchard goes to grass is when the trees get larger and older, and they get no crop with the fruit because the trees are too large. My

idea, from that time on, is to cultivate shallow, thoroughly and often during the season. Some grass will necessarily grow close to and under the trees, while they are small. I should cultivate, through the season, with the corn p'ow or with the Eagle claw or disk harrow or a common smoothing harrew or plank. By some means, I would keep the ground stirred up and mellow and fine, especially if the season is dry. An orchard, of course, requires some enriching after it begins to bear. But my idea is to cultivate during the proper grow ing season often, not too late in the fall. If you wish to stop cultivating you can sow something in the fall.

THE PRESIDENT—What is your objection to late cultivation?

MR. L. R. BRYANT—It induces a late growth of the trees and consequent danger of injury from early freezing in the fall. The trouble is immature ripening of the wood. One good way would be to sow oats in the latter part of the season. Apples that drop wouldn't get quite so much soil on them, and the ground is a little firmer. If your oats grow up so much as to be in the way, you can run through the orchard with a plank and break down the oats and stop the growth to a certain extent. Or perhaps you could sow the buckwheat, and, if you sow it late enough, turn it under the next spring. There is a certain quality of soil right next to the tree that in my opinion it is immaterial whether you cultivate it or not. If the grass grows there you want to cut it down. As a rule, however, it will be shaded and the grass will not grow.

MR. READ—I don't know as our experience in Wisconsin has been the same as it has been with you here. I am surprised to hear these experienced orchardists speak of growing corn in an apple orchard, especially a young orchard. In our section of the country we would consider that the quickest road to suicide. The trees will not make one-half the growth that they would with no crop there. The growing crop will impoverish the soil and take up the moisture needed by the trees.

MR. PIPER—How much growth do your trees make in a season?

Mr. Read—The young trees ought to make from a foot to two or two and one-half feet. They wouldn't make six inches with corn growing in the orchard.

The President—I saw a cherry orchard at Ripon, Wisconsin, where one-half had been put into corn and no crop was grown on the other half. In the matter of growth, you could see the difference half a mile away.

Mr. Read—I would like to emphasize this point. Never plant corn in a young orchard. You may not be such great rye growers as we are in the potato country, but if we want something late in the season for a carpet to the ground we sow a little rye. I believe that would be preferable to sowing oats, as our friend recommends. Winter rye is one of the greatest friends the American farmer has. It leaves a good carpet on the ground.

Mr. Piper—Do you harvest your rye the next summer?

Mr. Read—We plow it under in the spring.

The President—Both of these gentlemen may be right, and both wrong. The conditions under which corn may produce good results have to be understood. So please don't condemn either Brother Read or Mr. De Land.

Mr. Piper—I grow corn in my orchard every year, and give it a good coat of manure every year, and I believe I have as fine trees as I have ever seen. The reason why I asked Mr. Read whether he harvested his rye is that I think rye is one of the worst things to take the substance out of the ground that there is, if you harvest it. It will make the ground poor faster than anything I know of.

Mr. L. R. Bryant—I was speaking for Illinois when I made my remarks. One criticism that I have on Mr. Cotta's paper is that he said a certain mode of cultivation would encourage the growth of the tree, carrying the inference that it was desirable to get a very strong growth. I think on our ordinary soil in Northern Illinois the young trees will get plenty of growth any way. That is one reason why I should plant corn if it had the effect that Mr. Read speaks of. You would get growth enough in an ordinary season if you cultivated with a crop of corn in young orchard trees.

My main objection to our prairie soil is that our trees grow too fast. I should not do much to encourage growth of trees in the ordinary prairie soil until they begin to bear. As soon as they begin to bear I should apply fertilizer.

MR. TOOLE, of Wisconsin—I wish to say that circumstances alter cases. I notice that you raise orchards here on ground that we in Sauk county, Wisconsin, would hardly undertake to plant in, because it seems to me too rich. We would not plant an orchard there on very rich soil. We have to be careful in regard to stimulating too much growth in a young orchard. Blight troubles us where a luxurious growth is stimulated. And we have also the danger of winter-killing if the growth is prolonged too late. So I think it would be desirable on such soil to raise corn, from the fact that you wouldn't have so rank a growth as you would if you cultivated the ground and gave it entirely to the trees. You must give some thought to ripening up the young tree before winter.

MR. FRIEND—I like the sentiment of Mr. Cotta's paper. I believe he is right when he takes a stand against allowing the orchards to go to grass and be eaten up by the bugs. As a matter of fact you may go into your orchard that has been allowed to go to grass, after three inches of rain has fallen, and take up a shovel full of earth and you won't find it wet down that many inches. This is simply because it can not penetrate the blue grass sod. If any of you gentlemen will go into your orchard to-day where the grass has grown and dig down you will not find a particle of moisture below the sod. The tree must die. We hear it said that we must not cultivate too much, because we will get too much of a growth. They say the wood ought to have time to ripen up. I have been planting trees for the last twenty-five years. At first I babied my trees and watched them carefully. I have yet to see the first limb that has ever grown out of season. I am not able to find one. If you cultivate your orchards thoroughly, they will grow rapidly in the growing season, but when the season is over, I am never

able to produce any new growth out of season. The new growth has just as much time to ripen up. The only difference is that under cultivation the trees grow more rapidly during the growing season. I have tried just the opposite way for the sake of experience. I have a young orchard of about four years transplanting, and have manured and cultivated it thoroughly, and a year ago last fall—the wetest season I have seen in forty years—with warm weather also with the wet, there wasn't a particle of growth out of the growing season. One strange thing that I noticed was there were fruit blossoms set on the new growth. I attributed that to the wet and warm fall; but there was no new wood growth. In reading the reports from all over the country where they are supposed to know how to grow fruit successfully, I find that they allow their trees to grow from two to four and five feet. In New York state they say it is a good thing for the trees to cultivate and get a rapid growth of the young trees. Before you can get fruit there must be size to the tree. And until it is producing fruit the young tree ought to grow fast, inasmuch as it does not grow out of season. As soon as it commences to produce fruit, then it can not be forced to produce undue growth. In our country growing corn in the orchard does not effect the growing of the trees one particle, because the corn does not ripen in that season of the year when the tree is supposed to grow. Rye will ripen up when the force of the soil ought to go to the tree. They tell me that it is the ripening of the grain, and not the growing of the grain that is hard on the soil; that in growing an apple it is not the pulp that takes the substance of the tree, but it is the ripening of the seed. I am thoroughly convinced in my experience in the growing of apple trees or any other kind of trees, that it is well to plant corn and cultivate the corn and the trees alike.

SMALL FRUIT FOR THE AVERAGE FARMER.

E. S. Fursman, El Paso.

Mr. President, Ladies and Gentlemen—

I am a farmer myself. I live on a farm, and have lived on the same one with Mrs. Fursman for thirty-three years. My intentions are to stay right on that farm the rest of my life. There are only two men in this world who can get me off that farm. One is the sheriff and the other is the undertaker. The sheriff, I am happy to say, has a poor chance to-day; the other fellow, I am not going to talk about.

I raise, at home, corn and hogs and clover and oats and small fruit. I raise small fruit on my farm for this reason, because, by practical experience and observation, I believe that it is an advantage to me and my family. I believe that small fruit on the average farm is a success, for five reasons. To me it is a moral, a social, an intellectual, a physical, and a financial success. If we have success in all those lines we are pretty well fixed in this life.

The raising of small fruit on the farm is a moral success, for this reason: If I have a nice big strawberry bed, and a raspberry patch, and a whole lot of Early Richmond cherry trees, and apple trees, and peach trees, and everything that goes to make up fruit on the farm, I have found it a good deal easier to entertain my children, and keep them at home. I have raised a large family of boys and girls, and it has been a good deal easier to keep the boys at home on Sunday when, otherwise, they would have been off fishing and hunting, or off swimming, and places of that kind. As it is, they can bring their young companions to their own home and entertain them nicely by going into the strawberry bed instead of running around to these places on Sunday. I believe it has helped me, as a father, to bring up my family by giving them lots of small fruit with which they can entertain themselves and their friends. To me it has been a moral success in my family.

I consider it a social success, for this reason: On a nice day, Mrs. Fursman goes out and brings in a six quart pan full of nice ripe Bubach strawberries, and comes in and sits down on the back porch. About that time Mrs. Horner or some other neighbor drops in; and to see these ladies sit there and talk and visit—no gossip, of course—is amusing. We used to hear so much about the country cousins going to the city to visit. Now we hear a good deal about city cousins coming down to the farm, especially where there is plenty of

small fruit. Mrs. Forsman says that we entertain a good many friends during the fruit time, and we can't entertain them so cheaply in any other way as we can under a nice cherry or plum tree, or out in the strawberry patch. We don't have to sweep, and clean up the parlor every day. They don't want to get in there at all.

It is an intellectual success, for this reason: You just start a nice small fruit garden on your farm; buy plants and set them out, and then you will commence to study their nature and their growth, the different varieties, etc. And you will have all you can attend to in the way of study, and it will amuse you too. A man who has this small fruit to look after, if he once gets interested, there is no danger of his going to town every Saturday afternoon and wasting away his time on a dry goods box, whittling, and smoking a two cent cigar. He has something else to interest and amuse him.

It is a physical success. I have heard a noted physician say that he never knew of a person being sick from eating too much ripe fruit just fresh from the tree or vine. It is said that a man can't eat enough peaches to hurt him if he will pick them off from the tree when they are fresh and ripe. But this physician said he had seen hundreds of cases where people, and particularly children, were made sick by eating half ripe fruit. In what condition is the fruit that is shipped into this town? Much of it travels hundreds and thousands of miles in poorly ventilated cars. Some of the fruit becomes over-ripe and rotten, and the gases escaping from that decayed fruit circulates all through the car. What kind of fruit is that for a man to eat? Compare that with going out into your own orchard and picking there nice ripe fruit.

It is a financial success, because I have never seen the time in thirty years when you could not market some fruit and get returns for it. It must be put up in nice style, not in an old tin pail or market basket. You don't have to take it down town if you don't want to. There are plenty of farmers who would be glad to get it. And by raising a variety of fruit it is easy to make quite an income where you have the land all ready for it.

And so with me, it is a moral, social, intellectual, physical and financial success, having lots of small fruit on the farm.

You can just as well have all the fruit you want for yourself and family, and some little to give away to persons who are not able to have any, and some to sell, from the time strawberries come in the spring until the crops are gone in October. Last year I attended the meeting of a farmers' club

on the first Thursday in November, and one man took us out and gave us nice grapes from his vines. I will venture to say that there is not one farmer in ten, through this section of country, who has these small fruits on his farm. Why doesn't he have them? There are just three reasons.

One reason has been given, that it is cheaper to buy the fruit. God pity the wife and the children of the farmer who raises a hog or a steer and sells it, and buys fruit for his family. They eat dried peeches with the skins on. The first reason is, that the average farmer has got the idea in his head that it costs an awful sight of money to go to work and start a small fruit garden on his farm, therefore he can't afford it.

The second reason is the farmer thinks that taking care of small fruit, setting it out and tending it, is a mystery that only a few fellows can understand: and that there is no use of a common farmer trying to understand it. Why does he think so? Because he has read, some time or other, some report from some horticultural society that mixes the matter up so that the poor fellow don't know where he is. That is the worst thing that ever got into a man's head in this country, and it does more harm to our average farmer than any one thing in the world.

The third reason is that the farmer thinks it would have been all right if he had put out some fruit as he intended to three or four or five or eight years ago: but he didn't do it, and to start now it would take so long to come into bearing that he will die, or his family will break up, or something of the kind will happen before he raises anything. So he thinks he won't try it now.

I am going to prove to you how this is a mistake. There never was a time when plants and trees could be bought as cheaply as now. The tree peddler is a first rate fellow, and he has perhaps done some good in this world selling trees. But if there is any fellow situated the same way Fursman is, a little short of money these days, the tree peddler is a luxury he cannot afford. He is too great a luxury for a common farmer nowadays. We can't sell corn at twenty cents and hogs at three dollars and support that fellow. He stops at good hotels and drives livery rigs, and I can't. Therefore I can't afford to pay for his stuff. Farmers of Northern Illinois, until times become a little more prosperous, let the tree peddler alone.

It is a pleasure to take care of small fruit. Any one who can raise corn can raise fruit.

Another objection made is to the time it takes to raise the fruit. You can raise a crop of strawberries as soon as you can turn a crop of corn. I can raise a crop of Early Richmond cherries a good deal quicker than some farmers have ever turned a crop of corn. You can raise a crop of small fruit quicker than you can raise a steer and sell it, and quicker than you can raise fancy horses.

Now I am going to tell you how to raise a crop of strawberries. Go right out into the field that is nearest to the house. Never put a strawberry bed in a garden patch; for this reason, that the average farmer won't hoe. If you put stawberries in the garden patch you have got to hoe them, or else let your wife do it, and that would be mighty mean. Go into the nearest field, burn it over and plow it up as you would for corn. Harrow it nicely and put on a smoothing harrow and make it as good as you can with your horses. Then take a corn plow, take off a set of shovels and mark the field off in rows. Send to some first-class nurseryman and get first-class plants. Don't take them from your neighbor's old patch. In our locality we would send for some of the Bubach, Warfield and Cresent, and one good variety that will pollenize. After you get your plants go to work and plant them out. Big nice plants are a disadvantage if you don't know how to set them out. A boy will take a plant with a lot of magnificent roots, he will wrap them around and stick them in the ground and they will turn to white mould. If you get that kind of roots, take a pair of shears and cut them off just as the ladies used to cut off a boy's hair about forty years ago.

Let the corn go and set out that strawberry bed. Then take your two-horse cultivator and cultivate that strawberry bed ten straight times during the season. That is the secret of it. Mulching is all right; but that is a lazy man's way of surface cultivating.

In the winter cover up a little, so the ground will not thaw out after it has once frozen. It don't hurt the strawberries to freeze; it is the thawing that hurts them. Keep them covered during February and March. Use rye or wheat straw, but if you are an average farmer don't trust yourself to use oat straw.

The President—Oftentimes a farmer can't get anything but oat straw. I have just spread fifteen loads of oat straw on my strawberries, and I have done that for a number of years.

Mr. Fursman—He is a professional. I am not in his line. A professional fruit grower can put oat straw on his strawberry bed and make a success of it; but the average farmer wants to look out. If you get too much it will smother the plants.

One word to the ladies. Providing your husbands do as I have told them and put out a strawberry bed, and next spring you have a fine lot of strawberries, take away those miserable little bits of sauce dishes and get down the soup bowls. Smother the berries in Jersey cream, and you have got the men forever afterwards on the strawberry question. Plant a large enough bed so that you will have enough berries for the family and some to spare. If you have a little strawberry bed, and some children come to see your children, you say to your boy: "Now, don't you dare to take those children out in the strawberry bed; don't you know that your mother is trying to get a mess of strawberries to-morrow night for supper?" My friends, go without your small fruit if you are going to do it that way. Either put out enough so that you will have plenty for yourself and your children and your neighbors. and so that you can give the washwoman some to take home, and the man that works for you, or don't try to have any.

L. R. Bryant moved that a vote of thanks be tendered to Mr. Fursman. Carried.

VEGETABLES FOR THE FARMER.

Mrs. Emma Groh, Dixon.

We mean to do it some day, some day
We mean to slacken this fevered rush
That is wearing our very souls away,
And grant to our goaded heart a hush
That is holy enough to let them hear
The footsteps of angels, drawing near.

We mean to do it. Oh, never doubt
When the burden of daytime trail is o'er
We'll sit and muse, while the stars come out,
As the patriarch sat at the open door
Of his tent, with a heavenward gazing eye,
To watch for the angels passing by.

We see them afar at high noon tide
When fiercely the world's hot flashings beat
Yet never have bidden them turn aside
And tarry awhile in converse sweet
Nor prayed them to hallow the cheer spread
To drink of our wine and break our bread.

The day that we dreamed of comes at length,
When tired of every mocking quest,
And broken in spirit and shorn of strength,
We drop, indeed at the door of rest,
And wait and watch as the day moves on,
But the angels we meant to call are gone.

—*Mary J. Preston.*

Is it not sadly true, and truly sad, as well, that in these words, the history of most of our lives might be written. Instead of making life worth living by having a determination to make our little corner of this world better, purer, happier, for our having been in it, and thereby getting all the enjoyment that we possibly can out of it, many of us keep up such a persistant and never ending chase after money that everything else is forgotten or put off for the future until, alas, too often, life's brief span is suddenly ended or we have become too old, too sour or too sick to be able to enjoy anything. Our lives are but a reflection of our homes and in these should be laid the foundations for a good life, good health and purity. The farm may be made the pleasantest of all homes or it may be made just the opposite, and I think much depends on a vegetable garden or the lack of one, which kind of a home it is. That there is something wrong about many farm homes is shown by a variety of evidences. Let me cite to you part of a statement made by Dr. VanHorn at the M. E. conference in Chicago in October. He said "while the city churches of Rock River conference are growing, its rural churches are rapidly declining." One of the reasons he gave for this was a "growing aversion to farm life." He said in substance that farm life, especially on dairy farms was something so terrible that the young people were scattered in every direction to escape it. The parents, after the children were gone, if they had saved anything, soon moved to some town to reside and a tenant took the farm. It is a well-known fact that the population of the United States is rushing to the cities. Fifty years ago the cities of 8,000 and over contained only 8 per cent. and now they contain 29 per cent. of the population. Are these not deplorable facts and are we not marching right

along in the footsteps of all the older countries, in none of which does the farmer occupy anything but a menial position, politically or socially?

When I make the statement that the farmer is the bone and sinew of every civilized nation, I do it without fear of successful contradiction. Yet nowhere, save perhaps in the United States is there accorded to him, the respect due him, and even here on this point permit me to quote from the Atlantic Monthly: "The tiller of the soil, who in the days of our fathers was the embodiment of economic independence and civic virtue has passed away. He is the stock figure no longer of the orator, but only of the humorist. His relative social standing has been lost. The sturdy yeoman has become the "hayseed." Why is this? Is it not because farmers instead of making the farm what it might be, the grandest place for a home and the best place to bring up and keep their children, are making, in their greed for gold, such slaves of themselves and their children that the children spend their childhood in longing for the time when they can get away, and embrace the result the first opportunity to do so, being that the already crowded cities are still more crowded with farmer's sons and daughters, and tenants take farm. Now, if the owner of the farm could not make the farm home attractive, what chance has the tenant who, in addition to all the burdens of the former must make the rent beside.

I do not wish to be understood as saying that a vegetable garden would mend all these matters which seem so much out of joint, but I do say that a good vegetable garden is a long step in the direction of making your home pleasant and your family healthy and happy and therefore more anxious to stay on the farm. If properly managed it can be made to be a source of health, wealth, comfort and enjoyment 365 days of the year.

By a garden I do not mean a potato patch and several rows of cabbage, but a good garden, one that contains such a variety of vegetables that you can have them every day the whole year round. Let us take a look at some of its possibilities. In the spring you know we are told if we would be healthy we must have a regular house cleaning time with our blood, stomach, liver and what not. You must buy and take a box of pills, several bottles of blood purifier and maybe a tonic; costs you money enough to buy the seeds for a very respectable garden besides having to swallow the nasty stuff. I used to think this the only way myself, but I

haven't taken a dose of doctor's stuff for fifteen years and my health and strength are fully a hundred per cent. better than formerly.

The first things we can take from the garden as soon as the frost leaves the ground are winter onions. No medicine is so useful in cases of nervous prostration and there is nothing else that will so quickly relieve and tone up a worn out system. If you will eat them six days in a week, you might omit them Sundays when you go to see your best girl.

Pie plant comes next and is excellent for rheumatic sufferers and useful in purifying the blood; can be used all summer and simply put in cold water in air tight cans can be had in fresh condition all winter.

Spinach if sown in September and slightly protected during winter, can be had very early in spring. Besides being very palatable to most people is useful to those suffering with gravel.

If you are troubled with sleeplessness work two hours every day in the garden and eat plenty of lettuce. This, by having a small hot bed in the spring and providing a partial shade in the hottest weather, you can have it eight or nine months in a year.

Next comes asparagus; for four or five weeks you can have it every day. (We like it every day and then have what is left over cold for supper.) It can be prepared in a variety of ways, especially where you have cream. By using a minute quantity of salycilic acid you can successfully can it for the winter, and how handy it is when you have a guest to dinner to be able to run down cellar and in ten minutes time have a dish of asparagus, peas or beans all ready to be set on the table. If you think your wife is not very amible because she isn't always pleased to entertain an unexpected guest to dinner. ask yourself if you have done all your part in this direction. I came near forgetting to tell that asparagus is splendid medicine for the kidneys. We always cut the last mess the day before we pick the first peas. There is only one vegetable better than asparagus and that is peas. If you plant three varieties, early, medium and late, you can have those for three weeks and if you were careful to get a few Early Ohio in an especially warm sunny place you can have some potatoes to go with them. Once I remember we had both on decoration day, but that was an unusual season. You can not do that every year in Northern Illinois.

By the 4th of July you should have beets, beans, sweet corn, early cabbage and by planting for a succession, you can have them right along until frost comes; and I believe if you have had plenty of vegetables instead of medicines for your system up to this time, you can eat all the cucumbers and corn you want and they will not hurt you.

The corn and beans can be canned, dried or salted and thus had all winter almost as nice as fresh.

I cannot take the time to mention all the different vegetables which farmers here can have just as well as not and each one will contribute its share towards making their lives one continuous round of pleasure; but I must not leave out the tomato, that most beautiful of all the vegetables. Who has not heard of its many wonderful qualities. They are said to be invaluable in all conditions of the system where calamel is used and are a superior remedy for dyspepsia and indigestion. I have been told that they cause cancers and also that they cure cancers, and I once read of a girl who ate six bushels one fall and that all her teeth fell out as a consequence. For my part I know that they look pretty, taste good, and last all the year round. Yes, I know another thing; if you raise them to sell and pick them yourself, your back will be broken and you'll turn green with tomato stain and envy because some one else is getting rich faster than you are.

The garden should only supply two-thirds of all your wants for the table in summer, but should keep it up all winter. Beside the supply of canned vegetables there should go into the cellar or pit beside potatoes and cabbages, celery, parsnips, parsley, turnips, carrots, beets, vegetable oysters and onions. Then upstairs in a closet where it is dry and won't freeze, there should be a box or a barrel of sweet potatoes and beside it a row of sacks of dried sweet corn, soup peas, and navy beans. Then you can have variety, the spice of life, in one direction at least.

Individual circumstances must determine where and how each one will have his garden, whether it shall be fenced and spaded, or planted in long rows and plowed. The latter is certainly and easier way, but pigs and chickens and a garden will not get along together very well. Perhaps, if you concluded to plant as much small fruit as Mr. Fursman will tell you too, you might put it between the stock and the garden. I don't think anything could get through his raspberries unless he thinned them out since last year. I want to say just a word to the farmer's wife. There are some

things that most of the men take to naturally, and that they will do every time without you bothering anything at all about it, but usually keeping up a vegetable garden isn't one of these things. Somehow they seem to need a great deal of encouragement about that. Make it your business to encourage them. Say to them, "John, you have such a nice garden this year and it make it so easy to do the cooking, that I think I will try and find time to help you get the weeds out that are in the rows." I know he will appreciate that kind of encouragement. Now, don't say, "I have more now than I can do." I know you have, but do less of something else. Don't stand a whole day, and maybe more, ironing starched and ruffled clothes each week. Don't ruffle them and then don't starch them, don't bake so many pies and cakes, you are better off without them. Arrange it to suit yourself, but bear in mind that kousekeepers need fresh air and sunshine as well as exercise, most farmer's wives have more than enough of that. I am advising you to go out and get rested. I know from experience that inspiration, comfort and health are to be found in a vegetable garden.

One point more and I close. I see so much advice to farmers as well as statement as to yields and prices of vegetables in agricultural papers which I am sure are very misleading, and I would not think my duty done did I not say a word about it. I do not know how it may be round and about DeKalb, and I presume it is not so where Mr. Fursman lives, but around Dixon there are market gardeners who raise vegetables enough to supply the entire demand for home-grown vegetables. Our farmers are a wide-awake lot of people who read the papers, and the result is that every year a number of them are induced to put out some vegetables for maket, expecting, if they believe one-half they read, to realize a small fortune. What is the result? The farmer plants and dreams of the money he will make; he hoes and plans what he will do with all this extra money. At last, some fine day, when, perhaps, his other crops very much need his attention, he has a load of vegetables which he must take to town. He goes from one groceryman to another and finds to his astonishment that they are all supplied. There is nothing to do but to peddle them from house to house. Now, they say that a Chicago woman will spend 10 cents for car fare, have a day's time to go to a special sale to get a bargain for 3 cents less than she could have had it the last time she was down town. I will not vouch for the truth of this statement, but I know that as

a rule woman are looking out for bargains, and when a Dixon woman sees a farmer stopping at her door with vegetables, she knows that this is her chance to get vegetables cheap and she improves her opportunity. (Her regular peddler hears all about it next time he comes.) Perhaps for a time, he vainly tries to get what the regular men are getting, but finally gives it up in dispair and takes what he can get to get rid of his load. I even heard of one man who took his load down to the river and dumped it in.

During the past season we sold not one bushel of tomatoes for less than 80 cents. Yet, I know of one farmer who peddled his load out for 30 cents. I never heard of his coming again. While we could have sold many more potatoes than we had for $1 a bushel, I know of several farmers who sold theirs at 75 cents per bushel.

For green tomatoes we got 40 to 50 cents a bushel this fall. We sold all we had and were asked for more, yet father was asked one day by a man who had a lot of them on his wagon. "Say, Mister, what do you get for green tomatoes?" "Forty cents a bushel." "Good land, I have been offering mine for 20 cents, and I can't give them away."

A vegetable garden for his family's use every farmer can and ought to have, and it will prove in every case a source of blessing and comfort, but a few vegetables raised to sell, will, nine cases out of ten, prove a loss and a disappointment.

DISCUSSION.

MR. TOOLE—I think we all heartily agree with the sentiments expressed in Mrs. Groh's paper. We all know how much better either fruit or vegetables are, fresh from the garden. Peas picked twenty-four hours are not so good as those which have been picked only twelve hours or less.

In regard to the social status of the farmer, in our community the farmer is better situated than in some other parts of the country. We don't worry as much about the social status as we do about our finances. I am called a pansy man, but I do some farming to keep my head above water. I will say, as far as the social standing of the farmer in concerned, that a farmer who sells out and goes into town, on the amount of capital which he had on the farm, his social standing will not be nearly so good in the town as it had been on the farm. With us, the farmer ranks pretty well in the community.

THE PRESIDENT—Mrs. Groh told you about the prices which she obtained for her vegetables. She has a very peculiar father, in one respect at least. When he picks his tomatoes, instead of looking at one side and running the chance of the other side being ripe, he tips it clear over and looks on the other side. There is nothing that goes from his wagon but what is always absolutely perfect. He is exceedingly careful, and care is the secret of the success of most people who are successful. I picked up a point in this regard in Mr. Toole's town (Barraboo, Wisconsin,) from a man who always sells his strawberries for a little more than any one else can get.

MR. TOOLE—The man who has earned his reputation is entitled to what he gets. But the man who has not made a reputation may sell just as good berries and not get as good a price. The man who just comes in occasionally, and is not regularly in the business, is not going to stand the same chance.

MR. BERGER—A year ago this last summer, I found some of my strawberries were small and some of them large. I assorted out the larger ones and put them in boxes by themselves, and sold them readily for twelve and a half and fifteen cents per box. The others looked better than they would with the large berries mixed in with the small ones, and I sold them for ten cents and three for a quarter. By sorting I got a good price for the best berries and could sell the others for a reasonably paying price.

MRS. GROH—Don't you find that your strawberries are damaged in sorting over?

MR. BERGER—No. We sort them in picking. In my picking crates I have four boxes to a crate, two boxes for large ones and two for small ones, where they average about the same. In that way there is no rolling about of the berries.

MRS. GROH—Do you do the picking yourself?

MR. BERGER—As far as I can. But my pickers have got to pick them that way or they can't come into the patch. They are instructed to pick them in that way.

TREASURER'S REPORT.

L. WOODARD, Treasurer, in account with The Horticultural Society of Northern Illinois.

Dec. 10, 1896	Balance as rendered	$233 29	
" "	—43 membership fees	42 00	
" "	—1 life membership fee	5 00	
Dec. 13, 1896	—1 membership fee	1 00	
Oct. 9, 1896	—State Horticultural Society	50 00	$332 29

EXPENDITURES.

Dec. 10, 1896	—J. C. Blair, per bill	$ 10 88	
" "	—J. E. Hartwell, per bill	36 48	
" "	—Hotel bill, Blair & Blum, J. C.	4 70	
" "	—Stenographer, Andrews	35 00	
" "	—Premiums	19 00	
Feb. 25, 1897	—J. L. Hartwell for Dunlap	10 88	
April 1, "	—D. Herrick, per bill	3 85	
Dec. 1, "	—Postage for treasurer	1 00	$210 50
	Balance on hand		$332 29

Respectfully submitted, L. WOODARD, Treasurer,
Marengo, Ills., Dec. 9, 1897.

EVENING SESSION.

Rev. A. T. Horn, of De Kalb, delivered an interesting and entertaining address of welcome, to which O. W. Barnard, of Manteno, responded.

PROTECTION OF OUR SONG BIRDS.

MRS. A. W. FISH, De Kalb.

The charm of the songs of birds is like that of a nation's popular airs and hymns, and is so much a matter of association that it is perhaps entirly natural for every people to think their own feathered songsters the best.

What music would there not be to homesick American in Europe in the simple and plaintive note of our blue bird or the ditty of our song-sparrow, and what to the European traveler in this country in the whistle of the black-cap or the red-breast, or in the melody of the sky-lark?

It is an idea common among the English people that our song birds are inferior to theirs, but it is no doubt due to the fact that they do not hear our birds in the most opportune moment and season. The nightingale needs to be heard at night, the lark at dawn, rising to meet the sun, and the robin, if you would know the magic of his voice, should be

heard in early spring, when, as the sun is setting, he carols steadily for ten or fifteen minutes from the top of some near tree. There is perhaps no other sound in nature. Patches of snow linger here and there, the trees are naked and the earth is cold and dead. At such a time this contented, hopeful strain fills one with the very breath and presence of the spring. And yonder blue-bird with the earth tinge on his breast and the sky tinge on his back, did he come down out of heaven on that bright March morning when he told us so softly that spring had come? We hear a loud call that comes from the throat of our golden winged wood-pecker that proclaims Tarrup's peace and good will toward all.

On looking at the matter closely we fine that most birds have--in the spring—some note or a call that hints of a song and answers perfectly the end of beauty and art.

As the fancy of the young man lightly turns to thoughts of his pretty cousin, so the same renewing spirit touches the silent singers and they are no longer dumb.

Witness the clear, sweet whistle of the grey-crested titmouse, the amorous warble of the blue-bird and the rich, long note of the meadow lark, the whistle of the quail, the drumming of the patridge and the like, even the hen has a homely, contented carol that is music to a hungry man, and I credit the owl with a desire to fill the night with music. All birds are would-be songsters in the spring.

Yet the coming and going of the birds is more or less a mystery and surprise. We go out in the morning and not a sound to be heard. We go again and every tree and grove is musical. Yet again, and all is silent. Who saw them come? Who saw them depart? Did you never think what wonderous beings these? Did you never think who made them, and who taught the dialect they speak, where melodies alone are the interpeters of thought? Whose household words are songs in many keys, sweeter than instrument of man e'er caught; whose habitions in the tree-tops even are half-way houses on the road to heaven. Think, every morning when the sun peeps through the leaf-latticed windows of the grove, how jubilant the happy birds renew their old melodious madrigals of love, and when you think of this remember, too, 'tis always morning somewhere, and above the awakening continents, from shore to shore, somewhere, the birds are singing forever more.

But in spite of the fact that they contribute so much to our enjoyment by their usefulness, beauty and music, the hand of man seems to have been raised against them, and

we are taxing our resourses and ingenuity to expel them forever. Millions of birds are killed every year that their bright plumage may be displayed upon the heads of women, because of the fashions of our milliners many of our most beautiful species are almost extinct. The snowy heron or egrel has almost entirely disappeared from the Southern states because of the war waged upon them by plume hunters.

These birds furnish the aigrette so fashionable in opera hats, bonnet and wedding dresses.

This snowy plume is worn only during the nesting season and their destruction means certain extermination of the entire brood through starvation. And in spite of this fact, which should prevent all humane women from ever wearing aigrettes again, the plea of the great majority of women is that of ignorance. What a comment on women is this item!

Frank M. Chapman, of the American Museum of Natural History, New York, has compiled a list of the birds which he saw on the hats of women in that city during two afternoons. Forty species were represented, including thrushes, warblers, shrikes, fly-catchers, tanagers, swallows, orioles, wood-peckers, jays, owls, grouse, doves, quails, shore birds, herons, gulls, terns and grebes. In all he saw 175 wild birds, or parts of them, on hats. Of these, at least, thirty-two varieties are protected by law during the major portion of the year. The cause of the birds has its practical as well as its sentimental side.

Birds play a very important part in agriculture upon which the life of the world depends. Owls and chicken-hawks are enemies of field-mice. Other birds such as the swallow, night-hawks and whippoorwill feed on the insects that fly in the air. Warblers and humming birds pursue their food in flower and leaf, while the wood-pecker and creeper examine every inch of tree-bark. The thrushes and sparrows carry on the war upon the ground. The chickado eats 30 to 40 female canker worms a day, and in twenty-five days would destroy 138,750 eggs of this obnoxious insect.

Professor Forbes, director of the State Labratory of Natural History, found in the stomach of a single robin 157 larvæ of *bibio*—a fly which in the larvæ state feeds on the roots of grass.

National and state governments have passed laws protecting their forests, fish and game, and societies have been formed for the protection of domestic animals, but how little has been done for the protection and propagation of our children of the air.

The principal work of bird protection is conducted through the Audobon Society, which is established through 23 per cent. of the states of the Union. The object of the society is three-fold.

First—To discourage the purchase or use of any bird for ornamentation except the ostrich and domesticated fowls. (game birds included.)

Second—To discourage the destruction of birds and their eggs

Third—And that wherever possible the members shall use their influence with legislators to have one day in the year set apart as Bird Day, which in many cases it seems best to combine with Arbor Day.

From reports it has been shown that Wisconsin has advanced farther in bird protection, having set aside a day on which school children are taught by actual observatoin and guided by instruction.

Marshall Field, of Chicago, has gladdened the hearts of bird lovers by forbiding the use of some birds to be used as trimming on hats in his establishment. Much has been done through the press and in the schools to make people comprehend the desirability of protecting the wild birds. Yet much is still to be accomplished. The most fertile field for missionary work is among the women.

Once convinced that women, as a mass, are as determined not to wear song birds feathers as they have been to wear them the restless hand of trade will seek new fields.

The Sunday issue of one of our leading journals contains a well-written article on the violation of the game laws of Illinois. The writer who has given personal attention to the matter declares that birds of song and plumage are being trapped daily by hundreds in the city of Chicago, and that there are men who make a regular business of the illegal traffic and that their victims each year number many thousands. He also assures us that nearly all of these bird trappers are Germans who, not content with having evaded the laws of their own country, bring to the land which feeds and shelters them the same disregard of authority. The time has come for our people to take the matter in hand and decide. whether, in openi g our doors to wanderers from foreign lands we shall permit them to bring destruction to our own. .

The President—I once heard Mr. J. G. Holland deliver a lecture on reforms. in which he introduced his subject with the statement that the wiser policy if a man wanted to build a

symmetrical and beautiful forest would not be to prune up a lot of old snags, but to grub out and plant new. He followed this with the statement that instead of trying to reform imperfected characters it might be well to let Satan run off with them and put our forces to work upon the children. Not that we wish to lose any of these characters who are so unfortunate; but there is a question of policy in the world in the matter of reformation. The central theme of this evening's exercise from this on is a question of child education. And the paper that I hold in my hand, and that has the dignified name of the "President's Annual Address," if it has a point in it, has its central point along this line.

PRESIDENT'S ADDRESS.

J. L. Hartwell, Dixon.

Man is an upward looker, constantly seeking for better things. Man is by nature a philanthropist. He gets a new idea and he rushes to his neighbor that they may share it together, which makes a convention of two. He carries back a new idea and so is twice blest.

The convention spirit is abroad in the land. An era of tremendous onward movement is upon us. Napkins and bushels can no longer cover talents and ideas. They will escape, and with the speed of thought on the wings of electricity they penetrate to the remotest parts of the earth. We no longer depend upon inspiration for the proposition that all men are brothers. Science has demonstrated it.

Launched on this great flood of progress we are here in convention assembled to contribute our mite to and absorb our portion of the tide that is sweeping us on to higher ideals.

It seems to be a kind of unwritten law that the President of this society should in his annual address outline what he conceives to be its legitimate work.

In attempting to perform this duty I am not unmindful of the fact that my proper place is at the feet of many of our number who are older than I am in years, and more especially in experience. You have placed for a number of years as your Secretary in an excellent school of instruction and I assure you that in the performance of the duties of that office I appreciate the opportunities that I was thereby given for getting hold of the possibilities of the work that

lies before this organization to accomplish. It is peculiar to Americans, at least that portion who trace their ancestry to the bleak, stone-clad New England hills, to count the cost as each new movement is contemplated, and so it may not be inappropriate for us to cast anchor for a few moments, take our soundings and look about us. In short, to inquire into our situation as a convention of horticulturists.

Why are we here? Would not the time be more profitably spent in attending to such seasonable work on our farms, in our orchards, small fruit fields, gardens, etc., as might be done with profit?

The season just past was a very peculiar one—full of large promises and larger disappointments. It opened with bright prospects, fruit buds all alive with abundant moisture, and when our anticipations of an abundant harvest of fruit had reached the highest pitch, we woke up one morning with strawberries as large and as hard as marbles, blackberry and raspberry blossoms with black centers, new growth on grapes as limp as chickens that had tried to play dudes, and ground hard enough to hold up a loaded wagon. Nevertheless, when the harvest came—for it did come—the berries flowed into our market from hither and yon, until many growers felt relieved when they got returns from their shipments if a remittance was not necessary to square up the account. From all over this land the fervent and earnest prayer of many berry growers was: "O, Lord, deliver us from another big crop of berries!"

Evidently thinking that the frost and low prices had not sufficiently disciplined me, a neighboring brother fruit grower came at me after this fashion:

"Hartwell, you are to blame for all this. You have been preaching to the farmers and telling them how easy it is to grow small fruit, and now they are paying you back for your pains. The first thing you know every farmer around Dixon will be bringing berries to town. Then where will you be?"

It may be stupidity on my part, but for some reason this did not frighten me a bit.

I am just as well aware as my friend is that berry growing from a commercial standpoint for a number of years has been strained to about the last limit. For that matter what legitimate business has not? And I have given the average farmer credit for ability to see all this. The fact is, the enormous profits which have been peculiar to nearly every industry in the west especially, must go sooner or later, and the sooner the better for the common people.

I count that man a benefactor to his race who makes it possible for children of wage earners especially, and those who cannot afford many luxuries, to have upon their tables daily any article of food that will aid digestion and give them healthy bodies, thereby making an important contribution to the moral, spiritual, as well as physical growth of the world.

Intelligence is the true basis of industrial and commercial prosperity. To that end the legislators of our state have shown great wisdom in appropriating funds for the maintenance of such organizations as this.

Since I commenced the growing of small fruit as a business the consumption thereof has increased enormously—away out of proportion to the increase in population. This is partly due to what might be called an educated task, but chiefly to reduced prices, resulting partly from competition but largely from reduction in the cost of production.

This change has been brought about through the work that horticultural societies and kindred agencies have done. The spirit of investigation is one of the earmarks of the nineteenth century. I for one am grateful that I was born at a time when I can reap the benefits to be derived from it.

I came here to swap ideas with you, to look into your methods and discoveries and tell you about mine. This, as I see it, is one of those scriptural cases in which "giving does not impoverish and withholding does not increase" our riches.

The final conclusions of this body should be authorative. No definite statement should be made from superficial observations. No one should be led astray by immature conclusions. He who sets a tree does it for the lifetime of the average human being, and when we estimate the loss or gain therefrom many naturally unproductive years must be counted in.

This leads me to suggest that in my judgment too little time has been given to the question of varieties in our former meetings. Varieties differ in period of maturity, productiveness, hardiness, quantity, etc., and their differences are not constant under all conditions.

This society has been in existance for thirty years, and it succeeded the Northwestern Fruit Growers' Associatfon, which dated back nearly twenty years more. That much good has been accomplished is not debatable. That there are possibilities for a larger degree of usefulness I think is equally true. We are hampered by our limitations. We come in touch with

too few people. We move within too small a circle, and, for aught I can see, the diameter of that circle is about the same from year to year.

The larger field is before us and the means are at hand by which we can reach it. If we are to make any permanent and substantial gains along the lines we are working it must be by reaching a younger generation than attend our meetings. The agency at hand by which we may reach them is our public schools and the key by which we may gain admission is the public school teacher.

Whenever the great army of earnest, intelligent men and women who are directing the growth of our children are impressed with the importance of any question which they are asked to consider, rest assured it will be considered and acted upon.

Farmer, in its application and vital connections, is a larger word than horticulturist; in fact, in a general sense, the latter is included by the former. Any agency by means of which the farmer's intelligence may be quickened and field of observation enlarged may be appropriated for the dissemination of horticultural knoweldge. Of slow development, and, therefore, I hope all the more permanent, the farmer's institute is assuming shape that I trust will make it an instrument of much value to the state. This comparatively new organization should receive a hearty support from horticulturists and as a society we may be of appreciable service to the institutes held in our district.

Until every rural and suburban home produces small fruit in variety and quantity to abundantly satisfy the family occupying it; until cherries, apples, pears and plums are as common as chickens and pigs on every farm; until the beautiful shall be considered a part of the useful in the domestic economy of every household; until the school houses of our children shall be something more than a plain, cubical box, situated on a niggardly piece of ground, whose only decoration is a barbed wire fence—with all due respect to the chief industrial interest of these our hosts—until all these things, and more, are attained in Northern Illinois, the mission which justifies the existence of this society will not have been accomplished, and when these ideal conditions have been reached this society will have fully demonstrated its claims to an indefinite lease of life; for horticulture, like other sciences which build on nature's process, is progressive, and what is ideally perfect to-day is but the stepping stone for better things to-morrow.

PRIZE ESSAY—WHY AND HOW SHOULD AGRICULTURE BE TAUGHT IN RURAL SCHOOLS.

JENNIE M. WILSON, Mears, Michigan.

If only the weary miles did not intervene, how gladly would I meet with the fruit growers of Northern Illinois at their coming meeting, at De Kalb, where we might converse face to face on this all-important subject. Yet, as that cannot be, if I may in speaking through these feeble lines, convince any of the great good arising from the teaching of horticulture in our rural schools, I shall "rejoice and be exceeding glad."

I have for years been interested in this subject and, being fortunate enough to be a teacher in these schools, have had a grand chance to practice what I preached.

As to why it should be taught, the reasons are manifold. Horticulture of to-day, is not what it was a century ago. While the arts and sciences have steadily advanced in that period, horticulture has kept pace with the foremost, standing next to grain raising in importance—not only in the pleasure and comfort it brings to our homes—but in a commercial point of view.

Long and earnestly have we worked, to bring it to its present high standing, but soon our hands will rest from their labors; soon the responsibility must rest upon our children. Shall we fit them for the work, or shall we leave them to struggle long years to solve problems that might easily be explained to them in childhood?

It seems to me a great and a sad mistake for any person to object to the teaching of horticulture in our rural schools, as very many of our boys and girls get all the education they ever get, in these schools. For this reason, if for none other, it is our sacred duty to grant them every privilege that will aid them to become intelligent workers in this great and glorious cause. If we would have them such, a love for horticulture must be instilled in childhood and fostered in youth, for we all know how next to impossible it is to change the habits of old people.

It has been said, and that very truly, that to attempt the reformation of an old man, was like trying to straighten the crooked and distorted trees in a forest. With the application of guyropes and pullies, one might possibly straighten

one in a year, but more than likely, kill it in the operation; but if we went to the saplings, we might straighten a hundred in a day, and injure none of them.

Thus it is with the minds of childhood; we can easily impress valuable lessons upon them that would make little or no impression on mature years.

Children are lovers of Nature, and I have yet to find the child who would not gladly take lessons from her great Book. To them it is a source of pleasure which needs little or no encouragement. All they need is opportunity. Let us then, by all means, give them this chance, by admitting the study of horticulture in our rural schools.

And now the question arises, how shall it be taught? My answer is, let the work be practical. Do not depend altogether on books. In Germany, gardens and orchards are a part of the school grounds, and a portion of time each day during the growing season, is spent there, in giving practical lessons. I once read an article written by a successful horticulturist of Wisconsin, who said he owed his success to lessons learned in such a school. Each pupil had his task to perform and an experienced teacher to guide his hand. I say, let our schools do likewise; for such practical knowledge gained by experience, is worth more than many terms at school where nothing is taught but that is contained between the covers of books.

I said I had practiced what I preached, but in my experience, no grounds were ever furnished, nor was I ever asked to teach horticulture; but the little folks and I always managed to have our flower-beds, when it was possible, and from them many a lesson has been given.

I wish that any who doubt the feasibility of this work, could see the children as I have seen them, eagerly watching for the first tiny plant; and when it came, a shout of rejoicing went up. Each day, when the weather was fine, they had their lessons from the flowers, but if, perchance, it rained, a lesson was given in the school-room, where seeds and potted plants were helpers. Each child would listen with rapt attention as I showed them how each tiny seed wore a little coat, and that under this coat was a little plant, and a store of food to nourish it until it took root in the ground and sent up its tiny leaves, as they had seen them in the yard.

Transplanting the flowers opened the way for another lesson, showing them how the different plants required different soil, according to their nature; and that it was just so with their fathers' orchards; that we all had to study and learn what kind of soil the trees required, and what food the soil needed to make them healty and productive.

I then explained to them, how that everything that lives and grows must have food; that although the plants and trees did not have mouths and teeth to chew their food, like animals, they had roots and leaves which served them instead, and obtained their food from the soil and the atmosphere, taking in the gases and soil substances through their roots and leaves; that under the influence of sunlight, the leaves digest this food and use it to build up the plants and trees.

I never saw a class of boys and girls more interested, than one before which I exhibited a simple specimen of clover, and told them of the wonderful work it could do. Each child was allowed to examine the plant, their attention being called to the little lumps or tubercles on its roots, when I explained to them how the soil was a perfect menagerie of microscopic organisms or bacteria, and that in studying their nature it had been found that they have the habit of locating themselves on certain kinds of plants, and especially on the clovers, where they cause the little tubercles, which they had just been shown, and that they live in these, drawing nourishment from the plant, and in return give it compounds of nitrogen, which they are able to produce from the air.

Thus in a short space of time they learned a lesson that is all-important for the horticulturist—a lesson that we older heads were years in finding out; that by green manuring with leguminous crops, we might greatly lessen the expense for commercial fertilizers.

In thus giving my experience, I give my answer as to how horticulture should be taught in our schools. Let it be practical; and let us in securing our teachers, strive to engage those whose whole heart and soul are in the work. Teachers who will teach horticulture because they love it, and not simply because it is required by the school law.

As I said at the outset, I am glad this subject has been brought up by the society of Northern Illinois, and I feel that much credit is due you for the interest you have taken for the advancement of horticulture. It is our earnest prayer that the good work may go on, until the same interest permeates our entire land, and until horticulture is taught in every school, from the rural school to the university, and a love for it is cherished in every home.

MORNING SESSION, DEC. 2, 1897.

L. R. Bryant read report of Committee on Treasurer's accounts as follows:

Your committee to audit the Treasurer's account would report that we have compared the same with the accompanying vouchers, and find the same correct.

Respectfully submitted,

L. R. Bryant,
H. R. Cotta,
Charles Hey,
Committee.

AD-INTERIM REPORT OF TRIP THROUGH WISCONSIN.

J. L. Hartwell, Dixon.

August 20 I started from Dixon for a week's run through Wisconsin, my primary purpose being to look up hardy and desirable varieties of apples for Northern Illinois.

My trip took me through Madison, Portage, Montello, Princeton, Ripon, Baraboo and West Salem. We had had no rain for over a month. I found plenty of moisture at Portage, also east, west and north of that place.

Our potato vines were all dead from drought and ripening; their's were fresh and green, many late varieties being in full bloom. Wisconsin had a very large crop of apples last year and nearly a failure this.

The lay of the land and soil characteristics of Southern Wisconsin differ very little from Northern Illinois—rich, rolling prairie, none being on a dead level, such as may be found in Champaign and Livingston counties, this state. From Portage to Princeton is very sandy, the chief farm products being beans and potatoes, very little fruit of any kind is grown.

The country around Ripon has made quite a reputation for the production of small fruit especially. Pres. L. G. Kellogg devoted himself and team to my service during most of one day, and enabled me to get an excellent idea of the fruit industry in and around Ripon. Mr. Kellogg is secretary and agent for the Ripon Fruit Growers' Association, through which most of the fruit in and around Ripon is marketed. There are between eighty and one hundred members of the association, who bring their fruit to the association's building, where it is received and recorded and from which it is

delivered to freight and express agents. The expenses of the association are shared pro rata by its members. Sixteen quart blackberry cases were billed the day I was there at $1.00. Chicago quotations the same day were from 40c to 60c. Mr. Kellogg informed me that about the same difference held through the season, and he thought the difference was due to the reputation the association had attained for good stock and honest measure.

The varieties of small fruit grown are about the same as in our state, except the Ancient Briton takes the place of Snyder, the canes of which are buried every fall. The Loudon raspberry is uniformly promising wherever tried, but owing to high price of plants has not been planted extensively.

A journey through Wisconsin will show up the old orchards in about the same condition as Illinois—very much dilapidated and gone to grass. Many commercial orchards are being set and are receiving the attention which advanced ideas in orcharding demand. Mr. Kellogg has a young apple orchard of sixty acres some distance from Ripon, and ten acres of cherries near the city. I rode through a fifty-acre Duchess orchard just coming into bearing. While driving around the city Mr. Kellog showed me four trees Northwestern Greening, about eight inches in the body, very symmetrical, perfectly healthy and free from blight, but carrying no fruit. They bore very heavily last year. These four trees are about as large as any of the variety to be found in the state. Mr. Kellogg told me that he had seen enough of the Northwestern Greening to be fully justified in planting it extensively. I found it planted in every young orchard, free from blight, and to all appearance as hardy as the Duchess. With one exception every one spoke favorably of it.

From what I saw of this variety in Wisconsin, the specimen of fruit exhibited at State Fair and grown by Mr. Cotta, in Carroll county, this state, and from what I have seen of the trees grown elsewhere in Illinois, I am confident there is no better apple for orchardists to set in Northern Illinois than the Northwestern Greening.

I hired a team at Portage and drove to Baraboo, a distance of eighteen miles along the banks of a stream, Baraboo by name, if I remember rightly. The country along this stream and around Baraboo and Devil's Lake, two miles south of Baraboo, is noted for its romantic scenery. While at Baraboo I visited the orchards of Mr. Toole, Chas. Horsburger and Franklin Johnson, all of which were comparatively old, most of the trees being on the down-hill side of life. In

all three of these orchards I was surprised to find the old seek-no-further trees of my boyhood days, comparatively healthy and bearing on this, a decidedly off year, for Wisconsin.

In these orchards the varieties which showed the best points are: Utter's Red, Plum Cider, McMahan's White, Wolf River, Longfield, Snow, Bell Pippin and Wealthy. The Haas was bearing quite heavily for Mr. Hirshinger this year. Mr. Hirshinger had a very large exhibit at the state meeting last February, which I had the pleasure of seeing. One lesson which I learned at this, about the first adopted home of the Russians, is to give them, the Russians, as a rule, a wide birth. Their predisposition to blight, their tendency to drop their fruit before maturity, and the fact that they are nearly all summer or fall varieties in this country does not make them a desirable acquisition to our list of fruits.

Mr. Toole, who is a "Ramsy specialist," is doing some experimenting with different varieties of plums, one of which, a native which he calls the Baraboo, he considers very promising. It resembles the DeSoto, is larger and as productive. With honest dealing and intelligence for a basis, Mr. Toole has built up a large trade all over this country in pansies and pansy seeds.

Mr. Franklin Johnson, whose home is in the north suburbs of Baraboo, has the reputation of getting two or three cents more per quart for his berries than the usual market price. Mr. Johnson thinks it is due largely to his care in picking and marketing. He says that a strawberry that is removed from the plant by taking hold of the berry will begin to decay first at the points where the fingers touch it. The stem only is touched by the fingers of his pickers. Each picker is furnished with a cloth which is used to keep the direct rays of the sun from their berries while they are picking. Mrs. Johnson is editor of the Wisconsin Horticulturist, a journal published by the State Horticultural Society. In her hands the Horticulturist is growing in popularity and usefulness.

Secretary Philips has an orchard six miles north of West Salem, the situation of which is unique. It is reached by ascending the slope of a hill over a mile in length.

Mr. Philips has acquired quite a wide reputation as a pomologist, and his experimental work in orcharding is watched with much interest by apple growers of Wisconsin especially.

Varieties top-worked in the branches of the Virginia crab is Mr. Philip's method of getting a hardy apple tree. He

thinks the ability of a tree to endure severe winters and droughty summers depends very much upon its start during the first few years after planting. A well established tree has greater powers of resistance than one that gets its start under unfavorable conditions. Therefore, the farmer's orchard especially should not be all set at one time.

Here, as elsewhere, I found but few apples, and those mostly of inferior quality. Many varieties that were usually considered free from that disease were blighting badly for Mr. Philips this year. The Northwestern Greening, however, here as elsewhere, showed no signs of blight. The Sweet Russet crab, a variety new to me, of Wisconsin origin, I believe, was loaded with handsome specimens, yellow in color, but excellent flavor. It is a regular and prolific bearer and hardy.

Returning to Madison in the morning, I spent a delightful half day with Prof. Goff, in the University experimental grounds.

Want of space precludes more than a brief mention of a few of many things which I saw during my short stay at the University grounds. The horticultural department of the University, over which Prof. Goff presides, is conveniently and commodiously housed in a beautiful new building, with class rooms, library, laboratory, lecture room and greenhouse. A large room under glass is provided, where classes in winter may have practice and observation work in planting, propogating, grafting, cultivation, etc. I was much interested in an exhibit showing the root extension of plants. The specimens were secured by digging parallel trenches on opposite sides of a plant whose roots were wanted extending downward and laterally as far as the roots extended. The roots in the bank of earth between the trenches were held in their natural position, while the bank was washed away, by fine wires supported by frames of lattice work which had been placed in the trenches.

The approximate root extension of a few plants which I noticed was as follows:

	Downward.	Laterally.
Grapevine	6 feet	15 feet
Strawberry	1 foot	1 foot
Gregg rasp	4 feet	4 feet
Corn	6 feet	4 feet
Three-inch apple tree, more than	8 feet	More than 16 feet

Contrary to the usual idea, there were not many grape roots near the surface. Prof. Goff thought the severe winter may have killed them.

The experimental grounds contain a large number of native seedling plums, some of which are quite promising. Extensive experiments in "pinching back" cane fruits as to increasing productiveness show that once pinching back does not increase the productiveness of raspberries and blackberries, and pinching back the laterals tend to diminish rather than increase the crop. Experiments in crossing the Alpha tomato with a French variety, began in '83, produced a bunchy sort, many of whose plants were sterile. By careful selection this last feature has been practically eliminated and a valuable variety secured. Prof. Goff has a number of seedlings of the Crandall currant that he thinks are an improvement in productiveness and quality over their parent. The results in experiments with new varieties of small fruits differ very little from those in our own stations.

QUESTION BOX.

Question—Does it increase the fruit productiveness of cane fruits by nipping back? Does heading back cane fruit make it bear more fruit?

The President—There is a theory abroad in the land that it does. Is it true?

Mr. Read—I should judge that it would be the same as thinning fruit trees. We get less in quantity but better in quality.

The President—The question is, does the nipping back of the canes cause them to bear more in quantity.

Mr. Read—It gives more budding surface.

Mr. Toole—My answer would be, yes.

The President—I was led to ask that question by the report of a series of experiments in the experiment station at Madison, Wisconsin. Professor Goff has been experimenting on that point for some time. He has made a great many experiments; and the report of his experiments is this, that there is no appreciable increase of cane fruits by nipping back. Twice nipping back is a decided detriment in matter of bearing. It decreases the yield. It causes a second set of side branches to start out and they do not have time to mature the wood, and are killed by the winter.

Now as a corollary to this statement there might be the question, What do you nip back for, then? A child can pick from a low bush; but when the branches get away up in the air there are several reasons why it is better to have a smaller vine.

MR. TOOLE—Do you get larger berries by nipping back?

THE PRESIDENT—No.

MR. READ—You want to get down near the ground to nip it off. The cane should never be over eighten inches high when it is nipped off. That is the recommendation of all our Wisconsin cane growers

MR. TOOLE—When the question was first presented I was inclined to say yes, from my own experience; but that refers to black raspberries especially, and not to blackberries. Notwithstanding what Professor Goff's experiments may show, I will say that I am positively in favor of nipping back black raspberries at about from eighteen inches to two feet from the ground, thereby giving more fruit bearing surface. That leaves the vine more within my control than if it runs higher up. I don't know what the Professor's plan might be. If he did no trimming back at any time he would have an unmanageable growth. If we nip back we are in the habit of saying that we must have about so many canes to the clump. It may be possible that he may get a great many single canes. In that case he may have sufficient fruit surface without nipping back. My experience is positively against a second nipping back. That gives a second growth late in the season that will not mature, and wood will not ripen.

THE PRESIDENT—The advantage of nipping back is to get the bushes down to where the snow will protect them in the winter.

ARTHUR BRYANT—My idea is that cutting back does not increase the amount of fruit. If you let the cane grow all it has a mind to it probably will grow just as much fruit. If the canes grow as strong as many of the Black Cap raspberries and blackberries do grow, a great deal of the vine is up so high that we can't get at it, and it may be broken down. By cutting back you get a stiffer cane, and you can utilize

all that you want to grow there. You may not get as much fruit, but you get more of it than you can use. We have some small patches of our own that grew just as they were a mind to and, when the canes were away up in the air, if they didn't break down, they would develop fully as much fruit as where they were trimmed back. But with a large patch you couldn't handle it.

THE PRESIDENT—Some people run off on a tangent along the line of nature's processes. They say this trimming back is unnatural. The whole thing is unnatural. Cultivation is unnatural. Nature, aside from man's assistance, does not cultivate the soil. It is unnatural to transplant from one climate to another; but when you have got the thing picked up from one climate and put in another you have got to give it the conditions that produce results. Hybridization is natural and unnatural. Man assists it and gets the results. Those potatoes and apples on the tables are all artificial in the sense that man has brought them about, so far as present results are concerned, by his intelligence; but if you don't follow nature you will never get them in the world. It does not pay to say that a thing is unnatural unless you can show that in doing it you are going against the thing that produces results.

J. V. COTTA—While I thoroughly agree with Professor Goff's theory as to the productiveness of the cane fruits in case they are not nipped back, still I would say that we ought to look at the practicability of the problem. I would say that while it is perfectly feasible for those who are conducting an experiment station to tie the canes and make high trellises, and preserve the natural growth intact, and secure them against storms and other contingencies, still the practical fruit grower cannot afford to do so. In order to keep a plantation in a manageable shape and within bounds, he must keep his vines within the reach of his pickers; he is obliged to nip back. But this nipping should have its limitations. In the first place it should be done early in the season when the canes reach not more than two feet, or eighteen inches from the ground, then it is better if it should be nipped.

Then let the laterals take their course, and the following spring they may need another nipping back to get them into better shape for handling. You should also nip back and cut back the ends that are more or less injured by freezing. If the tips of the long canes produce fruit at or after a cold winter it will be small and insignificant. Nip back the sound cane, to the strong buds; and do that after growth has commenced so that you can see where you should cut it.

Mr. Read—I think Mr. Cotta has struck the key note in this matter—the question is where to nip back. After nipping back, the cane will continue its upward growth a little. If you nip back at eighteen inches your bush probably reach two feet. Eighteen inches is decided by most growers as the proper place. You only want to take off the tip. You should not let it get up to two feet in height and then cut it back six inches or more. If you do that you have done that plant more harm than it can ever recover from. Nip it back when it is eighteen inches high and it will still grow upwards six inches, making a bush six feet high.

J. V. Cotta—Don't let the bush expend too much of its natural force before you nip it back. The correct method is to just take off the tip. Otherwise it will expend too much vital force and you will damage it more than you can do it good.

Mr. Hay—I have a row of blackberries along the fence, where I couldn't cultivate it. I nipped back inside the field, where I cultivated, and outside, next to the fence. I paid no attention to the vines. They grew ten feet long. I never saw anything like the amount of fruit that set on those canes. But there was too much of it, and the fruit didn't mature. I got very nice fruit from those that were cut back.

J. V. Cotta—In an excessively dry season, you do not get a properly matured growth. You get premature ripening that is likely to be injured by the cold of the following winter. The shrivelled up berries and the dried up canes are probably caused by the winter's frost. If you will examine your canes early in the spring, after the winter is

over, as the cane commences to grow you will see that there is a discoloration in the canes. Not in the wood, because those canes have no wood. It is pith. So far as those discolored canes are concerned the fruit is ruined, whether the fruit is wet or dry. When they have progressed about so far there is an end to the sap growth, and the berries shrivel up. Invariably, our people have attributed this to dry weather. It is no such thing; it is the cold of the previous winter.

H. R. Cotta—There is one point that should be considered, and that is the different varieties. The variety that only makes a short cane, say three feet long, should not be nipped back. It is only the rank growing varieties.

The President—I think it is no advantage to nip back the late varieties, such as the Loudon and the Turner, which make only a small cane. But rank growing raspberries, including most all Black Caps, should be nipped back. Schaffer's Collossal produces a number of canes from one hill, perhaps seven or eight or a dozen canes. I think there is no advantage in nipping those back. It would make too many branches. After the Schaffer's Collossal gets to be four or five years old I don't think there is any advantage in nipping back.

Question—What do you do with rabbits in your nursery?

Mr. Hay—It seemed to me that yesterday an error crept in here in regard to feeding them corn to keep them away from trees. I asked that question because I have fifty plum tree that are already badly nibbled by the rabbits.

Mr. Toole—I had one experience with tame rabbits where they did a great deal of damage to our plum trees. There were apple trees near by, and the apples were laying on the groung within ten feet of some of the injured trees. They came along and trimmed off little branches from some trees and others they would bark. There were cabbages in a patch not far away. They were not hungry. They had plenty to eat. This idea of leaving a crop of cron or anything else to feed your rabbits is a delusion. You had better look after your rabbits in some other way.

Arthur Bryant—I think it is pure cussedness on the part of the rabbits. We were digging some trees this fall.

We dug them up and covered the roots just were they stood. In the night the rabbits took a little nibble out of pretty nearly every tree that had been dug, and left the others.

L. R. BRYANT—Are we to understand, Mr. Hay, that the plum trees to which you refer were orchard trees?

MR. HAY—Some were cultivated and others were wild.

L. R. BRYANT—If you will cut cornstalks about three feet long and tie them around you trees you will have a protection against the rabbits and possibly the winter's sun.

QUESTION—Will English gooseberries grow in Illinois?

H. R. COTTA—I answer no.

THE PRESIDENT—They would nearly all mildew.

MR. PERIAM—The climate is too dry.

QUESTION—What is the successful cultivation of a goosbeerry?

THE PRESIDENT—Surface cultivation is the answer to that question.

AUTHUR BRYANT—And pruning.

THE PRESIDENT—In currants I should say you have to be careful about deep cultivation if you want a good crop.

NEW IDEAS IN POTATO CULTURE.

L. H. READ, Grand Rapids, Wis.

There is an old saying that runs like this: "Try all things, and hold fast that which is good."

But many have forgotten the first clause, and so only hold fast to the old methods that have been followed for years regardless of the fact that the present is a time of great advancement, and that all lines of labor have been revolutionized by new inventions and discoveries.

The farmer and fruit grower, of all men, should be the most progressive and should most assuredly "Try all things, and hold fast that which is good."

It has been one of my hobbies to try all things in my line, so far as it was in my power, and in doing so I have spent much labor in testing hundreds of varieties of potatoes. I have also grown thousands of seedlings myself, a few of which I am happy to say have proven to have merit, and have become quite generally known throughout the country. Others of my seedlings give such promise at the present time that two of them have been named "Klondyke" and 'Yukon."

But the object of this paper is not to speak of my successes and failures, but to tell you a few facts that I have dug out in my study of that greatest of food plants, the potato

First—I want to call your attention to the idea that has been growing popular for several years in some sections, regarding what is known as Southern Second Crop Seed. Many claim that such seed is even better than the Northern seed potatoes, which so many Southern planters have been in the habit of purchasing each succeeding year.

Now, I set out to discover if this was a fact, and if so, why it was so. If this second crop seed is better than all other seed, there must be some reason for its being so. I have never read or heard any reasonable explanation of the fact, and so have devoted considerable study to the matter, and believe that I have found the reason why it is better for seed, than ripe stock, and am willing to admit that in part the claim is well founded.

It is claimed that the so called "second crop seed" will keep sound and firm until the season for planting has arrived. This is true, and in fact I believe lays the entire secret.

I have discovered by continued experiments that when a potato is perfectly ripe, unless kept in practically cold storage, it will very soon begin to wilt. In other words, it evaporates a part of its moisture, thus leaving the tuber shrunken and less fit for seed purposes—in the same way that a wilted cutting of currant or other plant grows less vigorously than an unwilted one.

Repeated observation shows that a tuber that has not reached full maturity will retain its moisture, and for many months continue as firm and solid as when dug, under conditions where a ripe one will not. Such a potato often, on being cut for seed, will crack ahead of the knife, it is so brittle, and the juice will run from it as from a newly dug tuber. It is in just the condition to give its sprouts the necessary amount of moisture to start a strong, thrifty plant, suited to produce a bountiful crop.

The fully ripened tuber on the other hand has already passed the prime of life and is on the decline as soon as wilted. Its sprouts have not the necessary vitality to give them a proper start in life, any more than have the offspring of aged animals, or the buds of a shrunken currant cutting.

It is a well established fact in animal husbandry that the offspring of animals that have only reached the full flush of maturity are much thriftier than those of animals that have begun to go down the decline of life. The same law holds in the propagation of plants of all kinds; propagate from the strong, thrifty and robust, but not from the weakly declining plants that are withered or are approaching old age.

You never cut your grafts from old, or shrunken wood, but from young, vigorous growth. Bear in mind the potato is not a seed, but is a swollen, under-ground stem, in which are stored up starch, juices, etc., for the feeding of the young sprout.

Perhaps you will say, why is not the fully matured tuber better than one half-grown? For certainly it would stand to reason that it would be better supplied with the necessary chemical constituents, then the smaller, immature tuber can be.

I say that, under right conditions, it is. But in order to retain this vigor of full maturity, you must at once, by some process, provide a method of suspending all life action. In others words, you must retard nature's plan. For in that plan, maturity once reached, then comes decay and the wasting away of old age. And with that comes the loss of vigor, and with this loss of vigor comes inability to produce vigorour and robust offspring.

The fully matured potato, if it could be used soon after maturity, or kept from all contact with warm, dry air, that would cause it to wilt and deterioate, is as good seed as can be had. But it is a fact that very few growers can, and still less do, give the proper care, or have the necessary facilities for thus keeping their seed. Their mature seed is, therefore, wilted, and for that reason a small tuber that has not reached full maturity, and will not at once commence the downward run to old age and decay, is greatly to be perferred to a matured one that has already begun the decline.

My observation has repeatedly shown that mature seed stock, which has been so kept as to be in prime condition at planting time, is as good, or better, than second crop or late crop seed.

Central Wisconsin being too far north to successfully grow two crops of potatoes in a season, we have been experimenting with what we call a late crop. To get this, we plant good, sound seed at intervals of a few days, up to as late as July 22. For some reason, very early planted pota-

toes are not a success with us, and our main crop is planted entirely in June. The past season we planted most of our crop between June 6 and 22, and I can assure you that I never saw so fine a crop before in 20 years experience as a potato crank.

On June 29 and 30, on a piece of very poor, sandy upland, we planted two acres which yielded 220 bushels of medium size tubers. This was the earliest of our late crop. Our main crop, or river bottom land, run from 200 bushels per acre up to 433 bushels per acre, without any special preparation of soil.

In our experimental plats, planted during July, we secured some fine yields of smooth tubers about the size of hen eggs and larger, a sample of which you will find in our exhibit. These will make the best of seed, and we intend next season to plant a larger area during July, if the weather is suitable. We shall use that seed ourselves for part of our planting to further determine the merits of mature potatoes, when properly kept, compared with second or late crop seed.

SCAB AND ITS PREVENTION.

I wish here to speak of two things that, although not exactly new, as they have been recommended by our experiment stations for several years, yet are new to the great mass of potato growers. I refer to the soaking of the seed in corrosive sublimate as a preventive of the potato scab, and the spraying with bordeaux Mixture to prevent the early and late blights.

No one should ever plant a field of potatoes without first soaking the seed in the corrosive sublimate solution, (2 oz. of corrosive sublimate to 16 gallons of water). Even if the seed appears perfectly free from every and all trace of scab, soak it, as the germs of scab may be clinging to the skin of the tuber. The expense is small, and the remedy sure, if the treated seed is planted upon land free from the germs of the scab.

HOW TO PREVENT BLIGHT.

Bordeaux Mixture is just as sure a remedy against blights as is corrosive sublimate against scab. But one thing must be remembered, and that is that it is not a cure, but is a preventive. In using it you must commence early and apply it as often as necessary to keep every leaf coated with an armor plate of copper, then the germs of the dreaded blight will not be able to gain entrance. Don't apply

it once or twice and think that will do, as you will be very likely to lose entirely the labor expended in the first applications. If you take up the battle you must keep it up until the season is over, or your labor may be in vain. In a wet season you may have to go over your field as often as once a week, or even oftener. The only safe way is to keep that armor plate solid or the little foe may enter. In an ordinary season, four or five applications give very satisfactory results.

POTATO SEEDLINGS.

There is one other new idea that has been advanced by one who has had considerable experience as an originator and grower of many kinds of potatoes, that is so far in error that I wish to speak of it here. I refer to a theory expounded by E. S. Carman, the venerable editor of the "Rural New Yorker," who says "that in growing seedlings the best shaped tuber from the hill should be selected the first year, as foundation for the new variety, and that it will follow that shape of type in the years to come."

It does seem strange that a grower of such great experience should advance such a theory, as it is totally wrong.

Each seed from the seed ball is an individual life germ, and in some respect differs from all other such life germ. The tubers produced on the plants the first year, are, like those of each succeeding year, only a part of the plant. In other words, a swollen, underground stem with buds or eyes to carry on the propagation of the variety.

I have often found that a seedling may, the first year, be long and slim, and in after years change its shape to an oval, flattened form.

Again a seedling may be nearly round the first year, especially if a late variety and not matured, and the next season may develop into a long, slim tuber. In fact, very little can be told as to the future appearance and value of a seedling from its first year's growth, further than that a healthy, vigorous grower with a limited number of smooth, well formed tubers of fair size may be expected to do even better the next year, and so on for several years to come. But often the expectations are not realized in the growing of seedlings, but nevertheless, no branch of horticulture has so much of pleasant anticipation as the originating of new varieties.

May the anticipations and expectations of the Horticulturists of Northern Illinois be fulfilled to their fullest desire is the wish of your brother from the home of the Badger.

DISCUSSION.

MR. PERIAM—Do you claim that an adept in potato culture cannot discriminate between the tubers of the first year?

MR. READ—I mean to say that from one individual plant there is likely to be tubers of different shape. There is likely to be a long one, a round one and a flat one from the same plant. If you select the round one, it is no more likely to produce a round one than the long one.

THE PRESIDENT—Is the plant likely to produce both round and flat tubers in the same hill?

MR. READ—Quite likely. I have seen from the Beauty of Hebron, when it first came out, potatoes as round as a ball, and others that were that long (indicating) in the same hill. The typical form is probably half way between a long and a flat potato.

MR. PERIAM—Is it not a fact when the tuber emerges from the bud it is round in every case, and eventually in its growth it loses that roundness and sometimes is very much elongated?

THE PRESIDENT—I have seen the statement made by a potato grower that the potato to be normal in shape must have a continuous and regular growth. If there is a natural check and a subsequent growth, it is likely to get all out of shape. That will account for these knobs on potatoes. They result from the fact that the potato quits growing and then commences again.

MR. BARNARD—I would like to ask Mr. Read one question in regard to planting seed. Do you plant a single ball to the hill?

MR. READ—No, sir; I grind those balls up as finely as possible and allow them to stand in a tub or barrel, and I wash the seed out as I would tomato or cucumber seed. Then I put them in a hot-bed or greenhouse and start small plants. Then I usually transplant once in a bed and then later set in the ground.

MR. BARNARD—How many plants to the hill?

MR. READ—Only one plant to the hill. The past season I raised a thousand seedling.

THE PRESIDENT—In the matter of spraying you make my head swim, when you exact of me that I shall stand right over my potatoes and keep spraying them with that bordeaux mixture. What is to become of my other work and everything else?

MR. READ—I emphasized that point so that you wouldn't spray them once or twice and then come up next year and tell me that spraying didn't do any good. If you take up the battle you have got to keep everlastingly at it.

MR. PERIAM—Won't you state about how often the spraying should continue during the season?

MR. READ—It depends on the weather.

MR. PERIAM—You wouldn't spray every hour in the day?

MR. READ—No; just enough to keep that armor plate of copper solid.

MR. PERIAM—I heard you say that you soak your potatoes in a solution of corrosive sublimate. How long would you soak them? We want to know if what your experience has taught is true in this respect.

MR. READ—Doctors disagree as to the length of time. Some say one and some say two or three hours. You can take a kerosene barrel and cut it in two halves, using one half of it. Put the potatoes in the liquid, leave them there a couple of hours and take them out and put in another mess. You can use it about four times. After that you will have to use some more corrosive sublimate.

MR. PERIAM—Does not your experience show that an hour as a rule is sufficient? You simply want to saturate the bacteria or fungus germs.

MR. READ—I would be a little afraid to say that an hour would be sufficient. It might not. I did leave some in over night at one time, and I could not see that it did any harm. The solution is what is known as the one-to-a-thousand solution. There is one thing I want to say about it, and that is, it is very poisonous. It should not be left in any place where any children or other person could drink it, or where an animal could get at it. But there is nothing harmful about it

to handle it. That liquid solution is the exact strength that your physicians use as an antiseptic. There is no danger of poisoning yourself by having your hands in it.

THE PRESIDENT—Does it make any difference whether that soaking is done at one time or another—that is, whether it should be just before planting or along in the winter sometime?

MR. READ—I think not; I think you can do it at any time before using. But it should always be done before the potatoes are cut up for seed.

MR. PERIAM—I think there is another point in your paper that perhaps has not been appreciated. You speak of the second crop of Tennessee potatoes as being valuable for seed. Is it not a fact in your experience in Wisconsin that the fully matured seed that is dug when ripe, no matter what the season is, piled up on the ground and covered with a little trash and earth to keep the temperature normal, and then put in a pit in the ground and kept near the freezing point during the winter is a better form of seed than if the potato was immature?

MR. READ—You know I am a Yankee, and have a way of answering one question by asking another. You speak of digging those potatoes when they are ripe and putting them in a pile and covering them. When do you mean to do so? Would you plant those potatoes the last of April or the fore part of May, and then dig them along in July and put them in a pit and let them lay there?

MR. PERIAM—In your climate I would put them in at the time of ripening, which is after the warm weather is over. When I used to plant potatoes to sell in the market at Chicago I planted as early as I could before oat-sowing time, as soon as the ground is fit to work. I planted them deep and covered them deep. It is a scientific fact that the slower the germination is the stronger the plant. Every greenhouse man knows that. I wouldn't say that I had buried potatoes in July, because they are not matured. After the vines dry the potatoes must lay in the ground a little while in order to mature and fully ripen, just as an apple or pear that is picked

off from the tree must have its season to mature. But I have put my seed potatoes in the ground in August that I had selected for my own individual use. I planted everything that was as big as a walnut; but I wouldn't plant from the small ones year after year. The question is, which do you consider the best, the fully matured tuber or the tuber not fully matured?

MR. READ—The fully matured tuber, if it can be kept practically in cold storage—that is, if it can be kept so that it is as solid and sound and unwilted on the day of planting as it was when it ripened. In that case it is as good seed as can be had. But there is not one grower in ten thousand who keeps that matured seed in that condition.

MR. BARNARD—What has been your experience in harvesting potatoes during the hot months? Have your tubers sustained any injury by getting very warm or by being left uncovered?

MR. READ—Yes, sir; that is one reason why we plant late. We dig late. The most of our digging is done past the middle of October; in fact many of our potatoes were as green the night of the 9th of October as yours were in June—that is, the tops were green. We have a very favorable location. We are on the southeast bank of the Wisconsin river, the river being at that point half a mile wide. Below us is a large dam for the mill of the Centralia Pulp and Paper Company, making practically a lake nearly half a mile wide. Thus we are favored, and early frosts along our river bank do not touch us there. I think it was the morning of the 10th of October that we got the frost that killed our vines on that river bank this year.

MR. TOOLE—Two years ago last summer we had quite a lot of early potatoes, and when about the middle of August came it seemed as though they had been in the ground so long, we thought we had better dig them. We did so, and laid them in heaps about on the surface of the ground and covered them with straw, and earth on top of the straw. Some of these potatoes were dug on pretty warm days, when the thermometer was perhaps up to eighty, and at another

time still warmer, the thermometer being about ninety. Those that were dug during that very hot day, when we came to uncover them, were a rotten mass. Those that were dug before and after the hot spell were in perfect condition.

In regard to this question of the condition of seed, in our section the farmers are beginning to appreciate the necessity of having their seed in good condition, so that many of them are deciding to keep their seed out of doors. We have in our neighborhood one market gardener who has a large cave, about seventy-five feet long, where he stores a great quantity of vegetables. He looks after the ventilation, and keeps it very cool in the winter and spring. Some of our people think they had better buy seed from him, rather than plant from their own seed. I don't think there is so much in the question of late green seed as there is in the condition of the seed from the time of digging to the time of planting the next season. I don't believe their being immature helps the matter at all. The main thing is to have them pass through the winter time without even wilting or early sprouting in the cellar.

Mr. Read—Although it is not a pleasant thing to speak of the peculiarities of our climate, that might scare the good people of Illinois and keep them from immigrating our way, yet it is a fact that there is no telling what kind of weather we are going to get at any season of the year in Central and Northern Wisconsin. Mr. Periam speaks about the warm weather being over in the fall; but with us, this year, the latter part of September contained some of the hottest weather we had during the season. The mercury got up around the hundred mark. That shows something of the fickleness of our climate. We have all kinds of weather; and I will say that last Saturday morning, when making preparations to come down here, I got up quite early and found that the mercury stood twenty degrees below zero.

On this question of immature seed, if you have ever noticed, in taking potatoes out of the cellar you may find a long potato, one end of which may be very badly shrunken, and yet the seed end may be as solid as a new potato. You may find another potato with knobs, where the main potato

is perfectly smooth, but the knobs are shrunken. The potato always starts to grow smooth. Then if there comes a few days of dry weather, it checks the growth and forms a kind of crust. Then when the rain comes again some of those potatoes will shoot out and make a long tuber, or shoot out in branches and make knobs.

MR. HERRICK—Under some circumstances, those tubers that grow on the side will be soft; they will not be developed.

MR. READ—If after being dug (or before being dug if the vines are dead), you have some hot weather, the potatoes will wilt the same as any plant will wilt from excessive heat. One of the questions that nine out of ten persons will ask me is, How are you going to keep those little green potatoes? They say you can't keep them over winter. Here are some of them, and they are just as smooth and solid as any potatoes I have got, and they are not a quarter growth. If you carry them around and bang the skin off, they won't keep. You have got to keep them with care. Handle them with care, and keep them with care, and then they will keep better than any fully matured potato.

MR. BARNARD—When you keep seed late, for planting late potatoes, how do you prevent excessive sprouting of the seed?

MR. READ—Keep them just as cool as you can, and dry.

MR. PIPER—My experience is a little different from Mr. Read's. When I planted my potatoes, some of them had long sprouts. I pulled them off; then I cut my potatoes and soaked them in this liquid about five minutes. I cut mine before I put them in the mixture. They were all sprouted except the Banner. That variety did not have any sprouts. I have one variety that will grow long sprouts in the cave at a time when no other potato in the cave has started to sprout.

MR. READ—Another thing about late planting. I spoke of the fact that we would plant a larger area during July next year, if the weather is suitable. If the mercury is up in the nineties or near a hundred, and the ground is hot enough to cook them, don't touch them. If you get some cooler wet weather through July, just plant a few to see what they will

do. If you can't raise potatoes and keep them sound and in proper condition for seed, the best way is to send to some cooler climate and buy your seed. Very many times you will double your crop by having the very best of seed.

Mr. Barnard—How long would you recommend that a good variety of potatoes be planted in the same locality without changing the seed?

Mr. Read—If you can get your seed in proper condition, and keep it in proper condition, it will then depend wholly on the length of the life of the variety. Some varieties have long lives and some short lives. They all go out; they all go over the river in the end. That is what we must all look for in human life or in a plant. There is an end to their profitable culture.

The President—It don't seem to be so with the Concord grape.

Mr. Read—They are long lived, like the elephant.

The President—They are better now than they were when we were children.

Mr. Read—In seedlings, I find some varieties which are very promising for the first three years, may be utterly worthless in the fourth year. Others will last longer.

The President—We are getting better Norman horses all the time, and better Morgan horses all the time.

Mr. Read—It is not the same horse. I am raising new potatoes from seedlings all the time in order to get better potatoes.

Mr. Periam—Will any person believe that the Aryan race, the race that has given civilization to the world, the people whom Abraham met and treated as though they were angels—will any person believe that there has been any deterioration in that race?

Mr. Thurston—About three or four years ago, Professor Burrill read a paper before the Central Society, and which I published in the Farmer's Review. He devoted a large part of that paper to showing that it was impossible for anything to run out. It is only by improper selection that any life deteriorates.

MR. TOOLE—You are making comparisons that don't compare. Our friend Read did not say that potatoes were running out. He simply said that individuals are running out. He takes the stand that each one, from the seed, is an individual being. We know that varieties of strawberries run out, and varieties of potatoes run out. We tried to hold to the old Peach Blow, but we couldn't do it. I wouldn't be surprised if, to-morrow, some one might say that he had the only Neshanoc.

MR. PERIAM—The old Neshanoc is alive today, if it is in the hands of any one who knows how to take care of it.

MR. THURSTON—Professor Burrill says that the old Neshanoc is as good today as it was thirty years ago.

MR. READ—Brother Periam, your comparison does not hold water any more than a seive. Every succeeding generation of the Aryan race is the product of individual life germs, just like my seedling variety of potatoes. There is no comparison whatever between the human race and a variety of potatoes, strawberries or apple trees that are propagated by buds. You all know that every individual is just like one of those potatoes on the plate, the product of an individual life germ.

SPRAYING FOR INSECT ENEMIES.

J. L. HARTWELL, Dixon.

The enemies to fruit that may be combated successfully by spraying may be thrown loosely into three classes. Fungi or paracite plant, life for which we spray with Bordeaux mixture; Insects with biting mouths, such as Codling moth larvae, which may be destroyed by using a solution of Paris green or London purple with a little lime-water; and insects with sucking mouths, such as the Aphis, for which we spray with kerosene emulsion, formula for all of which may be found in the early pages of any of our recent reports and doubtless will appear in the forthcoming volume.

Spraying that is not done thoroughly and at the proper time might nearly as well be omitted. The more regularly there is a fruit crop, the greater the importance of systematic and persistant spraying. If it were possible to wipe from the

face of the earth all fruit bearing plants for one year, the pests which operate upon fruit would go with them, never to return. The Godling moth, *e. g.*, must have apples with which to perpetuate its species. Close observers have noticed that apples are comparatively free from worms on years following a failure of an apple crop. The mischief of it all is there are always enough apples on an off year to keep the little rascals at the old stand. I have had a fair crop of apples for three years. I sprayed three times this season; once, when the buds first opened with kerosene emulsion to kill the aphis with which the buds were badly infected, the second time just after the petals had fallen, with Bordeaux mixture and Paris green, the last time when the apples were as large as small marbles with Paris green and a little lime-water. My summer and fall apples were almost free from worms and scabs. More than half of my winter apples are wormy. Had I continued spraying longer would my late apples have been as free from worms as my early ones? I trust an intelligent answer to this question will appear in the discussion of this paper.

A strong force pump with an automatic stirer, not return stream, kerosene barrel, twenty feet of half-inch hose, a nozzle, two men, a team and wagon are necessary to do good work in an orchard where the trees have much age. The spraying outfit proper costs about $15.00 and would serve for spraying several small orchards and could be a partnership affair, or what I think would be as well some man who has a knack for handling machinery could rip up a spraying outfit and spray all the orchards in a neighborhood, making it comparatively inexpensive for each. One barrel of spraying material will serve for about forty trees the size of mine, eight or ten years old. My outfit which is like the one described has in my judgment paid for itself each year and I have little more use for it thus far than an ordinary farmer would have. While I am thoroughly convinced that spraying is practical and in many cases indispensible, the professors of entomology have made claims for spraying in some instances much beyond what has ever been accomplished, except on paper. There is too much incontrovertable proof that spraying pays to justify any wholesale condemnation of it. Had it not been for the use of Bordeaux mixture, the black rot would have made the growing of grapes in sections that otherwise were peculiarly adapted for the production of that delicious fruit a practical impossibility. On the other hand we cannot start our pumps going and expect all the

enemies to fruit to vanish as a mist before the morning gale even where we apply intelligently the last and best thought on spraying. I doubt if spraying for the curculio has ever resulted in much good, the paper by Mr. Wakeman in our last years' report to the contrary, notwithstanding. I have been able to come at the little Turk by jarring quite successfully.

The spraying of small fruit I have never attempted except in the case of the currant worm, on currants and gooseberries which I have been able to destroy by one application of Paris green.

My topic is a large one and I have purposely omitted discussing any of its phases where I have had no practical experience, trusting that there are those present whose experience will enable them to fill in the discussion what I have omitted.

DISCUSSION.

MR. FRIEND—I understand by this paper that President Hartwell takes the position that if there were no apples there could be no codling moths the next year.

MR. HARTWELL—I would modify that in this way, if there were no apples or any other fruit in which to deposit its eggs. I said if there was no fruit.

MR. FRIEND—My trees are just beginning to bear this last year. I tried spraying; but I never saw more wormy apples than I saw this season, and I don't live within a mile of anybody that raises apples.

MR. HARTWELL—The moth can fly more than a mile.

MR. PIPER—Did you spray all the trees in your orchard?

MR. FRIEND—No, I did not.

MR. HARTWELL—There are so many conditions that occur. A spray may be absolutely worthless. You may put it on the leaves all right, and the next day it may be washed off, and if the moth appears he will whistle at your spraying.

MR. BARNARD—Or you may use a material for spraying that has deteriorated in strength.

MR. HARTWELL—My Duchess were fine this year and they went on the market at 60 cents per bushel when all

around me they were picking scabby Duchess and getting only 40 cents. Mine were all clean. The Snow were pretty bad. My Grimes' Golden and Salome and a few other varieties were pretty near all wormy.

MR. PIPER—My Duchess were not so very wormy, but they were scabby and notty from the apple curculio.

MR. TOOLE—Two years ago last season we experienced a most complete failure of apples in Sauk county, Wisconsin, and one year ago there was about the best crop that we ever had. They 'were' so plentiful that we were almost ashamed to undertake to give them away to our neighbors. You would have to do a good deal of hunting to find any apples affected with the codling moth. Apparently that one year's absence has done so much to rid us of the codling moth. But we have enough wormy apples this season so that if we neglect spraying next year we are likely to regret it. Three years ago, I and my neighbors all did spraying; but varieties that came later than the Duchess, such as we put in the cellar for winter use, were almost as bad as they had been in other years. My spraying was kept up late into July. While I think we must by all means spray for the codling moth, yet I think we will have to make our plans for something else to keep down the late moths. After the time apples are pointing downward instead of upward, the spray don't count for much. If you spray apples when the blossom end points downward, your poison will not gather in there at the blossom end. Spraying alone will not keep away the codling moth. Professor Otto Leuger, of the state experiment station, of Minnesota, is probably as well informed on this question as any man in the United States. He said the question was still debatable as to what should be done. He gives some remedies for combating the codling moth. He said to take a sheet of ordinary newspaper, and fold it in a good many folds, and tie it around the body of the tree, and the moth when he gets through his operations upstairs and wants to go down would get into these folds. In this way you can catch hun-

dreds of them. Then go around and inspect them, and take off the paper, and run it through an old clothes wringer, and you have disposed of your moths.

MR. BARNARD—After they have gone down they have done their work.

MR. HARTWELL—That is for the protection of the next crop.

MR. READ—The female of the Codling moth has no wings. They crawl up the tree, and when they come down they spin their way down. Is that not a fact? We have a little enemy that has been working for the last two springs in our orchard. We have watched pretty close for him, but have not caught him yet. Early in the spring, as the buds on our young apple trees, which have been set out three or four years, begin to swell and are almost blossoming into leaf, something gets in some work on them and eats those buds out. Sometimes it takes almost every bud on one of those young trees. We have not been able to find one of the insects. We have the impression that it is something that works at night, but we do not know.

MR. TOOLE—Have you wild brush or woods near by, close to the orchard?

MR. READ—Yes, within fifteen or twenty yards.

MR. TOOLE—We have had some experience with an insect of that character. It was a black insect. I think when your brush land disappears your trouble will go away with it.

MR. READ—The damage is similar to that which is described in the case of the Crystal Cased borer, but we can find none of the eggs of that insect upon the trees.

MR. L. R. BRYANT—We had some experience with a bug this last season. In a few days they had done so much work that if left alone they seemed likely to nearly ruin the trees, by working on the small buds. I found some of the insects. They are a bug from half to three-quarters of an inch long. They work right at the base of the bud, and will either eat up all of the bud of the new shoot, or will eat enough at the base so that it breaks off and takes all of the nutriment away. If allowed to work on a small tree just planted, they

will almost certainly ruin the tree. Two or three are sufficient to kill a small tree, if left alone. They are a hard bug, black in color, I think, with some sort of a gray stripe, if I remember right. If you jar the tree, they will fall off. My method was to look over the tree, and if I found them to pick them off. If I did not find them I would jar the tree, and they would surely fall to the ground. My orchard is surrounded by timber.

MR. READ—We have another bug which we did find. It bores at the base of the small bud, and makes a little round hole. It seems to eat the bud all off.

MR. DELAND—I would like to ask Mr. Hartwell what time he sprays his trees? He spoke of spraying when his apples were as large as small marbles. I think that is too late in the day.

MR. HARTWELL—I spray twice before that.

MR. DELAND—That might not hit the Codling moth.

MR. HARTWELL—It did with my early trees.

MR. DELAND—The early apples might be as big as marbles when the winter fruit is not so far advanced. You might hit one variety in the right time, and the other not in time to do it any good. Spraying after the apples turn down, so that the poison does not get into the blossom end, does not affect the Codling moth.

MR. HARTWELL—We have been taught by one class of men, that the Codling moth only lays its eggs in the culyx end of the apple. We have learned recently that that is not true. It lays its eggs in the side and works down to the calyx end, where it comes out.

MR. TOOLE—I think most of the worms which I have found this year have entered in the side, but it is a question whether they are the Codling moth or not. They have not come out either at the blossom end or the stem end. I think it may be the work of the Curculio.

MR. L. R. BRYANT—There are two or more crops of the Codling moth in the course of a year. If you spray early and do the work thoroughly, then, if you have no neighbors near enough to furnish the seed for the next crop, you will

probably practically control them for your winter apples. But, if you have near neighbors, they may furnish the material for the attack in the second or third crop. They would work after the apples had turned down.

MR. J. V. COTTA—Some years ago I was on the farm of Michael Brantner, of Mt. Morris. He had fine plums and had been growing heavy crops every year. He put several bottles of sweetened water on the branches of his trees and put clothes around the bodies of the trees. In this way he gathered up nearly all of the insects. He harvested big crops of plums, while his neighbors who had procured trees from him, but did not use his mothed of destroying insects, never harvested any crop at all.

MRS. NOBLE—I have had a little experience in spraying flowers and also currant bushes. In your paper you speak of the currant worms, and that spraying with Paris green will destroy them. That has been our experience and we saved the currants while those of our neighbors have entirely died out. I have plenty of currants for jellies, and our bushes are in good condition. I also have a large bed of choice roses. There was a little insect destroying the green leaves and flowers, and I sprayed them with London Purple, and my rose bushes are now thriving and in fine condition.

MR. WEAVER—Speaking of spraying currant bushes brings to my mind the fact that I have always had perfect success with kerosene emulsion for destroying insects on currant bushes.

MR. PERIAM—That will destroy any insect that breathes through spores.

MR. HARTWELL—I took a case of currants to a lady who heard that I had sprayed my bushes with Paris green. She said, "I don't want your currants if you have been putting Paris green on them." Yet she was carrying home Tropical fruits; and every raiser of Tropical fruits sprays.

MR. H. R. COTTA—I think there is a little danger in spraying with poison. The white hellebore is a specific for the currant worm, and it is non-poisonous.

MR. PIPER—The black hellebore is just as good.

Mr. H. R. Cotta—And if the kerosene emulsion will do the work, it is just as good also.

Mr. Toole—We use white hellebore. We sometimes have a late brood that comes along late and I wouldn't be willing to use Paris green very late in the season.

Mr. Klaiber—I have raised currants in this town for the last fifteen years, and have had a great deal of trouble with both currants and gooseberries. I use what they call slug shot. As quick as I see one of the worms I commence spraying with this powder. If it rains I have to go over it again. There is no danger in using this.

Mr. Periam—Slug shot is pyrethum adulterated with other things and given a new name. I want to say to this lady, that in the case of roses that if you will use either pyrethum or kerosene emulsion it will kill slugs and all that class of insects, and it is nicer than Paris green to use.

Mr. Read—I want to correct the statement of my friend Periam. He said that slug shot is pyrethum adulterated. The poison of slug shot is arsenic. It has been adulterated and is not as strong as pure arsenic. Some scientists, in order to determine whether it was safe to spray apples with Paris green, estimated that where it is applied according to directions, a person would have to eat an entire barrel of apples at one sitting in order to feel even the very slightest injurious effects. So I don't think you need to be afraid of your currants if common sense is used in spraying.

MADE HONORARY MEMBERS.

Upon motion L. H. Read, of Grand Rapids, Wisconsin, and William Toole, of Barraboo, Wisconsin, were made honorary members of the society.

AFTERNOON SESSION.

QUESTION BOX.

Question—What is the meaning of a cross in fruit?

Mr. Periam—The strict meaning of a cross is to breed between two originals of different characteristics. That is the broad ground.

Question—What is the meaning of the word "hybrid" or "hybridize?"

Mr. Periam—That is more simple than the other, because variation is not so apt to come in. That is along the Bible idea of each after his own kind, or according to the scientific term that like produces like. You will recall that neither scientists nor the Bible saw fit to put in that word "exactly," because then there could have been no progress beyond a certain point. By the crossing of two species of a genera the product is likely to partake so much of the nature of both parents that there will be a fair divide in the first generation. The product will probably be like both parents.

Mr. Read—I do not know as I can wholly agree with my friend Periam. If I understand him correctly, he says that a hybrid is not so apt to vary as a cross.

Mr. Periam—I say in the first generation—the offspring of that union.

Mr. Read—Some of our scientists have said that the common garden bean and the lima bean were distinct species. If they are distinct species, I can't agree with you. If they are not distinct species, then mine are not hybrids. I am judging from my own results. They have always told us that hybridity was almost an impossibility, and that when once obtained, barrenness went with it. But that noble man at Santa Rosa, California, Oliver Burbank, has knocked all scientific ideas in the head and has crossed everything—all stone fruits and nuts. He will mix them all up. He says there is no place to stop, and I believe he is right. I believe that science will yet admit that the foundation of evolution is not so much in surroundings and environments, as it is in environments coupled with hybridity. Hybridity is the source of all species. I know scientific men don't agree with me in that, but that is an assertion which I believe is correct.

Mr. Periam—Mr. Burbank is a scientific man; there is no doubt about that. But I will guarantee you that neither Mr. Burbank nor any body of men who have scientific knowledge will tell you that they can successfully hybridize the peanut and the walnut.

Mr. Read—No; but he speaks of those stone fruits and nuts like peaches and almonds. He goes to the limit that all scientific men have said was utterly impossible.

Mr. Periam—In other words, you cannot hybridize a member of the rose family upon a member of the bean family. You cannot do it. And yet the rose family is greater in its association and genera than any other in the whole category of botany. But within the classification it may be possible to produce a hybrid between some far away member of the rose family and some nearer relative of the rose family.

OFFICERS ELECTED.

Election of officers for the ensuing year resulted as follows:

President—J. L. Hartwell, Dixon.
First Vice-President—H. R. Cotta, Freeport.
Second Vice-President—J. Friend, Nekonia.
Third Vice-President—Lewis Ulm, Rock Falls.
Secretary—Dwight Herrick, Rochelle.
Treasurer—L. Woodard, Marengo.

MARKETING FRUITS AND VEGETABLES FROM A GROCER'S STANDPOINT.

C. G. Bodman, DeKalb.

To avoid the abuses of the commission house the producer and merchant must come into personal contact, as there is between them that community of interest that makes them akin.

And how may that be brought about? I answer by mingling and discussions. Such a meeting as this is a great help. Local associations would do much toward bringing them together and exchanging thoughts and ideas.

I take it for granted the producer's first object is financial success. If this is attained it must be by a constant and steady market demand at fair prices.

I know of dairymen whose products would sell far beyond their ability to supply and at above market prices. Why? Because of uniformly superior quality and an established market name.

Let Lattin's, or Flynn's, or Love's, or Baird's name be seen on a package of butter in our market and it is snapped up before it is scarcely weighed. Why should not a fancy market name be made for your berries, your cherries, your apples or your vegetables? To illustrate: I bought of one of our near-by farmers a dozen or more Hubbard squashes—the pure blooded, black or dark skinned fellows, without the yellow streaks in their sides suggestive of undue proximity to the coquettish pumpkin, nor the sickly green streaks indicating a mongrel relationship to the Boston marrow, or worse, some nondescript variety. I exposed them for sale in front of my store and the result was everybody who had a tender spot in their gastronomical region for squash, either boiled, baked or fried, carried home or ordered one or more. The next time I saw the farmer I contracted for 100 more, and his whole crop was quickly exhaused. Quality did it!

In these days of profes ional market gardening and fruit raising, with rapid communication between producer and consumer, as well as the more and more cultivated tastes of the latter, the producer who does not aim high as to quality and style scores wide of the mark.

Let your aim be to produce not only good but attractive specimens, nicely crated, when possible, and bearing your name, and you will not need to seek a market for the market will seek you.

Another thing I would impress on you, for it is absolutely essential, viz.: to assort closely that the contents of a package shall be uniform in size and appearance. Nothing so quickly stops a sale as, after the facing layer is off, to find only culls and nubbins. If they must be sold, market them by themselves at cull prices and not under your brand or name; and the fancy prices you will obtain for uniform and fancy selections will raise the average above what they would bring if offered mixed together. Remember, round or large lots at good prices are always made from uniform stock.

Greater attraction is also suggested to the selection of varieties. Raise what the people want. Don't think anything will do. That is not the way the professional does. I am not addressing him in this, for he is far better posted than I and keenly alive to his interests on this score; but I am now talking to the novice, or it may be the semi-horticulturist as I daily meet him, and I repeat, don't proceed on the theory that anything is good enough and ought to sell, for it won't do it. But aim for excellence always, and success is sure to follow.

Another point: Select your customers. Either sell the consumer all the time or sell the merchant all the time and let him supply the trade. Nothing makes a merchant half so "tired" as to have a farmer drive up to his door with the remnant of a load which he knows has been hawked about town among the consumers, and which would not have been offered him at all only as a last and sort of sunset resort.

If you are resolved on making a reputation for your mark or brand, I suggest you confine your sales as far as possible to one, or at least to a limited number of merchants, whose places of business should be understood to be headquarters for your goods; for then it is there they will be sought for, and thus the grocer is interested in keeping and pushing sales on your particular brand.

Any grocer here present will tell you that nine-tenths of his sales are made on established brands; hence a reputation will insure you a quick and profitable market in the hands of your known agent or distributor.

With our facilities for rapid transportation early varieties of all kinds of products are placed on our markets from the south and elsewhere, long before those of our own people could be marketed; hence the sharp demand for table purposes has passed away. This being so, our home raisers should pay special attention to the canning demand. and this, if properly worked, could be made quite as remunerative as the earlier trade, because of round lots sold and escape from commission men; but the merchant should know in advance something of the expected supply that he may have his orders in hand, ready for its arrival. Varieties suitable for canning should be cultivated with special reference to this trade. I know of a certainty that housewives prefer home-grown fruits, especially for canning, because of superior firmness and freshness. Give them good fruit, good measure and early morning service and you will find a good market for your fruits.

There is a wide and growing field for choice vegetables, which if properly handled could be made very profitable. Lettuce and onions, fresh picked and crisp, are so much better and more wholesome than those shipped in, that our customers would willingly pay a premium for them. The same with peas, beans, cabbage, parsnips, etc. All should be made attractive to the eye, for it goes a long way toward making a sale. Wash your vegetables, and when possible tie up in nickel and dime bunches. Nickel and dime sales are quickly made, while bulks are haggled over or passed by.

Melons meet with ready sale, especially muskmelons. The variety I have had best satisfaction with is the Princess. It

is of good quality, uniform size, not too large nor yet too small, while its attractive appearance and good keeping qualities are all that can be desired. I understand that it is very prolific, and it is the best all-round variety I have ever handled. A grower from Yorkville has been bringing them to our market for two seasons—one or two full wagon loads per week during their season, disposing of them always and in short order. In fact he is more troubled to supply the demand than to dispose of his load. His goods are fine, his prices reasonable and they go quickly. I understand he makes a handsome profit from the raising of them.

Known varieties are demanded. It is a little thing you may think, but if you were aware of the weight the name carries you would not only pay attention to the variety but be sure it was true to name. I remember last spring, and other springs, in seeking tomato plants for my own garden, neither the seller nor raiser could give the name of the varieties, and I was totally in the dark as to whether I was planting the "big red" or "small yellow" sorts, which, by the way, was the only description they could give me or I have ever been able to obtain when purchasing plants. It would be a great satisfaction to know just what varieties we are planting, so that the season could be extended by early and late varieties.

While standard varieties are recommended for main crop, novelties, if meritorious, are frequently quick sellers and often command fancy prices, giving you an exclusive market.

Holding back part of the crop of keeping varieties is suggested. Last fall, a year ago, a certain near-by gardener forced early sales of his fine crop of onions and at low prices, while three months later he could have realized double the price. Keep back a portion of your crop—reserving the best—and bring to market in small lots and fancy condition and observe the ready sale at fancy price it brings.

Finally make good everything that is unsatisfactory, or better still, take it off the market altogether. Give the people to understand your great aim is to establish a reputation for superior goods and you will be pleased to know you have established a permanent and profitable market name. Don't be stingy with your measures. Give a quart for a quart, a bushel for a bushel, more is not necessary. I know the ever increasing tendency is to reduce size of package; but it is practice that will surely result in damage to the industry.

But I will not much longer trespass on your time, except partially to summarize the expressions of a grocer: That to win you must strive for excellence in quality and attractive-

ness to the eye, thus establishing for yourself a profitable trade brand that will be exclusive and valuable for years to come.

Then there is no reason why the consumer may not swim in oceans of jam, and the grocer and horticulturist strike friendly and fraternal hands, each taking his share of the cream, leaving to the commission merchant that portion which he has heretofore returned in his account sales; namely, skimmed milk.

DISCUSSION.

Mr. Toole---I think any person who has anything to do with marketing, whether he be a grocer or customer, will readily see the value of this paper. I think there are many customers who don't know why the bottoms of berry boxes are raised a little. The maker has a choice of the package which he buys, that distance up or down has already been fixed. Any grocer or buyer would be dissatisfied if the berries were picked in boxes where the bottom piece is actually down to the bottom. It would he well for the grocer to explain just why this is so, to the customer.

Mr. Hartwell—There are three distinct packages made for berries. There is the full quart, the standard quart and the medium, The Michigan quart is the medium. The standard quart is the dry quart, that is used in Southern Illinois. When that kind of a box is full you have got a good honest quart, and I will swear to it. If a box is full, it is what it is represented. It is only one of three standards. You can't find any others on the market.

Mr. Berger—If Mr. Bodman handles strawberries next season, that are filled in the "Hallock" boxes, and if he gets them direct from the berry grower, the one that starts the berry from his home, I will guarantee that the measure will hold a quart of berries when it leaves the berry patch. Those boxes hold more than the quart measure that the grocer uses.

Mrs. Bodman—Is it a fact that the boxes have held less, for the last two or three years, than they do at present?

Mr. Berger—No, the Hallock boxes hold the same.

MR. BODMAN—The point I was driving at was, as to geting good measure. The tendency of boxes and barrels, for berries and cranberries and apples, is towards smaller packages.

MR. HARTWELL—We have insisted, in our conventions, on a standard legal quart; and it is our desire that any one varying from that should be prosecuted.

MR. BARNARD—I would like to inquire whether the berry quart is a liquid quart or dry measure? There seems to be a difference as to the capacity of the two quarts. Does the Hallock box hold the same amount as what is known as a quart liquid measure?

THE PRESIDENT—No, sir; it is dry measure.

MR. BARNARD—What is the difference, in cubic inches, between the dry and the liquid?

THE PRESIDENT—Two hundred and fifty-six cubic inches is a dry gallon. One fourth of that is a quart. Two hundred and thirty-one and a fraction is a gallon liquid measure. One-fourth of the difference is the difference in the quarts. There is, I think, about six cubic inches difference between the two.

MR. READ—I do not agree with Mr. Bodman in what he has said as to the Hubbard squash. He said it was the quality that sold them. I say, it is the fashion. There is a universal idea all over the country that there is no squash like the Hubbard. The truth is, that there is a squash, in quality, so far ahead of the Hubbard that if the Hubbard was a human being it would not know it existed. I want everybody that like sqashes to get a little of it, and try it. It is called the Faxon, and was introduced by that Boston seedsman, named Faxon. It was first brought out as Faxon's Brazilian. In fineness of grain and dryness, it is unexcelled. It will not sell very well on the market, until you educate your customers; but nine out of ten, who have once tried it, will chase you up and want some more.

MR. BODMAN—I was not commending the Hubbard above all other varieties; but I say, if you are selling the Hubbard, it should be a genuine Hubbard.

Mr. J. V. Cotta—I think it is a great benefit to the fruit growers and dealers to get together and mingle ideas. Very few men who use small boxes ever get inside of a horticultural convention. It is a great benefit for the consumer to have fruit put up in packages of uniform size. I was in Michigan a short time ago and, in the locality where I was, I found most of the growers of fruit were marketing their fruit in the poorest kind of shape. They put a little good fruit on top, and filled the lower part of the packages with the inferior fruit. They were also using small boxes wherever they could, smaller than were used in other localities. The result of that practice has reduced the price of Michigan fruit to such an extent that, last year, a great many acres of crops were never picked. And this year, I was informed by one fruit grower that fully one hundred thousand cases of strawberries in one county alone were not picked, because they could not get enough for them to pay the picking; and about the same amount of raspberries were left on the vines. People don't like to get bit; and after getting bit in this way two or three times they will not buy any fruit at all. If people could always depend on getting a good article, packed uniformly all the way through, they would consume more fruit and pay better prices for it.

Mr. Hartwell—For an experiment, I asked my strawberry pickers to separate the berries, putting a certain standard of berries in one box and all the other berries in another box. We got about five boxes of the higher standard to one of the lower. I got ten cents a box for the higher standard, six and one-fourth cents for the lower standard and eight cents for the unsound berries, making a net gain of eight and one-half cents on six boxes of sorted berries over the mixed ones.

Mrs. Groh—How can you get the pickers to separate them in that way?

Mr. Hartwell—It took a little more work, but they wanted the job. I was told that Mr. Johnson, of Baraboo, got two or three cents a box more than any other grower. I spent an evening with him, and I asked him how it was

that he got more for his fruit than other growers. He said: "I try to give a full box, and have the berries in good condition. I have a way of working with my pickers; I treat them as though they were human beings. Once in a while I let them carry a box of berries home to supper, in addition to their regular pay and, if they behave themselves all right during the entire picking season, I give them a little extra at the end. But I don't promise it. I try to keep them in good heart. I am exacting, as to the kind of work to be done; and some of them don't like it, and had rather quit picking. They usually come back, however. I exact of every picker, that instead of taking hold of the berry he shall take hold of the stem. The difference between berries picked by the stem and taking hold of the berries themselves will show itself very plainly after they have been set aside for half a day. It is the general comment of my shippers, that by berries arrive in better condition than any others that they handle." I am going to try that way next year.

MR. TOOLE—It is better to sell all to the grocer, or all to the consumer. I have seen cases where they peddle as long as they can and then go to the grocer with the balance. This spoils the market for the grocer, and eventually spoils it for the grower himself.

MR. HARTWELL—I have always reserved the right to sell a case of berries to any customer for canning purposes at the same rate the grocer was selling. Small quantities I never sell to any one. Many times I will hand out berries as I am on the way to town and have them charged by the firm I am dealing with.

MR. SCOTT—I have always dealt with one groceryman. He has handled my potatoes for three years. I tried to get him to take them this year. He would not take any of them because those which he shipped in were finer looking. I will have to resort to peddling to dispose of my crop. Is there any reason why I should continue loyal to him another season?

MR. HARTWELL—You can't peddle everything you have got. You are dependent upon the groceryman. In this case you have a little surplus, and you will have to peddle them.

MR. BODMAN—There would be no objection to selling direct to the consumer if they would all sell at the price that the grocer makes.

MR. HARTWELL—A great many people are very critical about the age of a berry that goes into a can. They would rather eat a berry that is a little stale than to have it put into a can. They drive up to my place in order to get them fresh. So I reserve the privilege of selling to private consumers for canning.

MR. BODMAN—What grocers object to is that dealers so often bring the tail end of a load around, and they want the grocer to pay as much for the tail end as they have been getting in retailing them.

MR. H. R. COTTA—The first year I had fruit to sell the merchants told me that if I sold to the consumers that would end their trade with me, and they wouldn't buy of me at all. I sold the first season to one dealer on commission, and that was enough of that experience for me in that town. It might work all right in some places, but it didn't work in Freeport. The next season I sold to whoever I wanted to. The trouble was that there were times when the dealers couldn't use any. They were overstocked with berries that they shipped in. Then it would be necessary for me to sell to consumers. On other days the dealers would be glad to get them. That was some years ago. Now sometimes I retail half my crop, sometimes more and sometimes less. But the dealers are glad to get any that I will spare them. They know that I retail them, but they want them whenever I give them a chance.

MR. BODMAN—You probably raise nice berries.

MR. HARTWELL—It depends upon the conditions and upon the size of your town. Where everybody knows everybody, as in a town of the size of this and smaller towns, a man's reputation permeates everything, but in a town like Free-

port, which is a central shipping point, everything comes in from hither and yon, and a man can hardly establish a reputation to exclude everything else.

SMALL FRUIT ON THE FARM.

J. FRIEND, Nekonia.

When I consider the importance of this subject with its manifold branches involving questions of interest to all who grow fruit, to those who devote all their time and energy to growing fruit for the market, as well as to the average farmer, who, if any at all, grows but a scant supply for family use, and the high estimate usually placed upon papers and general information along the time of fruit growing emanating from this and other Horticultural Societies of the state, I could well wish for your sake, and that of all others concerned, that this topic had been assigned to one better qualified by broad experience and thorough knowledge of fruit growing to interest and edify all. I assume that fruit growing upon such a scale as will at least supply the full demand for fruit for home use is a legitimate branch of farm industry and is for good reasons entitledto better business care and attention than is commonly paid it. Its tendency to relieve farm life of much of its dull monotony ought to recommend it to the consideration of every farmer and its elevating influence be felt in every rural home.

I realize, however, that there are numerous agencies which have operated to discourage fruit growing on the farm aside from the natural difficulties to be met and overcome. The deception practiced by unprincipled persons to effect sales of nursery stock at exhorbitant prices has not been without its evil tendency in this direction. Many through a lack of experience and information have been induced to buy plants of irresponsible persons who could have no interest in the transaction farther than to effect the sale—upon their insinuation that the secret of successful fruit growing was hidden in and only revealed by the varieties which they offered for sale and their representation that the plants would take care of themselves and yield abundantly without any further care and attention upon the part of the planter than to place the roots in the soil, disappointment, and in many cases utter failure have been the result, tending to discourage the luckless planter and create in him a feeling of distrust as to the possibilities and indifference as to the

profit in fruit growing on the farm, and in which case those who honestly represent reliable growers have just cause for complaint. But I am not disposed to charge an undue portion of the responsibility for failure to dishonesty and none to carelessnes. As a necessary business precaution, and to protect himself against otherwise possible, and in too many instances probable loss through the careless indifference of planters. the nurseryman, per first page of his catalogue, admonishes us that his responsibility ceases when he has delivered the goods in good condition to the carrier, and in many instances the farmer seemingly acts upon the false theory that his responsibility ceases too when he has stuck the roots into the ground, and in the event of failure, places the blame upon the man who sold him the plants, the weather, or the artist who drew a gaudy picture of the promised fruit, or any place else where no responsibility will attach to himself for failure. Success does not depend upon variety or merit upon the price we pay for plants, and the fact that some do meet with a good measure of success would seem to indicate that the under supply of fruit on the farm is due to our own indifference to its care and cultivation rather than to the elements or unfavorable natural conditions and other causes to which some would be pleased to ascribe their failure. It would indeed be a difficult undertaking to lay down a rigid rule to be observed in the planting and care of the fruit patch that would apply on every farm, nor do I deem such a rule necessary, but apply the same degree of energy in the fruit patch as in other farm work, and the same degree of success will follow. Much information might be obtained by reading and by observation and can not come amiss, but skill must come by practice, and as a matter of fact the hoe skillfully wielded will produce the natural fruit which in point of size and beauty will exceed the productions of the artist's brush with the added quality of being pleasing to the palate. To those who may be in doubt as to the best time to plant, I might offer a few suggestions here. Spring is regarded as the best and safest time for planting all small fruits, the planter incurring less risk by protracted drought. Fall planting is only justified on the plea of saving precious time in the spring, and rarely affords any other advantage except in the case of strawberries, when plants can be secured close at home and set in August or early in September, in which event, if the soil has been thoroughly prepared and seasonable rains follow, they may be depended upon to bear a moderate crop

the following season without serious impairment to the plants. As there are no two farms exactly alike in conditions affecting favorably or unfavorably the growing of small fruit many questions of minor importance relating thereto, must be settled by the planter. But with respect to soil and conditions, which may commonly be found upon the majority of farms, I might say the soil should be fertile but not overrich as would be the case in old stock or feed yards, wherein too rank growth would be had in wet seasons at the expense of fruit, especially in strawberries, and liable to burn out in very dry weather. The reason of this seems to be that if the soil is thoroughly pulverized as it should be wheresoever the berry plantation is located, that the soil can not be made compact enough to retain moisture, an item of undisputed necessity and a point more ready gained by timely and thorough cultivation than by any other practical method yet devised. As labor expended in the preparation of the plant bed means labor saved after planting with all the added advantages to the plants, and as time and labor are items to be duly considered by the farmer, a location convenient for cultivation by horse power is an item of no small importance. I never would locate a berry patch where the air could not circulate freely from whatsoever direction the wind blew, when we undertake to provide shelter from the winter's blast with a thick bank of overshadowing trees we court the worse evil of the intense heat of the rays of the dry summer sun, untempered by the free circulation of air, and also invite the freezing touch of a belated spring frost. All things considered the exposed plat of ground is to be preferred. But there can be no objection to planting among young fruit trees provided due allowance is made for the cultivation of both. The advice to plant of the kinds which are known to do well in your own locality does not imply that you should get plants of your neighbor because they are free. Plants which are not grown to supply a legitimate demand for plants, but rather through neglect are not such as would be selected by those who expect to give them good treatment, and while a poor plant well cared for is better than a good plant neglected, it is well to bear in mind that good vigorous plants carefully set are everything in the start and good timely cultivation everything after that. In the matter of selecting varieties, of which there is a multitude, and to which new candidates for public favor are being added year after year, I find it the most difficult to offer any advice, inasmuch as all varieties are so ma-

terially affected by conditions extremely local; realizing that the farm is coming to be, in a certain sense, an experiment station, and the merits or demerits of a variety must be reckoned largely by its behavior on the farm fairly treated, I would undertake for trial from time to time in a limited way some of the newer sorts selected by a careful study of public opinion with reference to them, and as fruit on the farm means fruit for your own table covet the best. But in selecting varieties for main dependence let those with long established reputation have the preference over those sold and recommended only by strangers, and herein we are often placed at a disadvantage when we wish to plant of a certain variety, which perhaps we have seen in fruitage but can not get its varietal name, the owner having failed to keep and record the same. This should be done as a matter of convenience to ourselves and a duty to others, and buy only of those who are known to have a reputation for square dealing, whether agent or grower, and hold them accountable for any variance in name.

The only real secret to be learned, and which can not be disregarded in the case of strawberries, is that of the perfect and imperfect flower. If a variety of the latter be selected, which is usually the most prolific, a sort with perfect flowers to furnish pollen must be planted with it or failure will be stamped upon every blossom. The Bubach, No. 5, is entirely satisfactory to me as a variety with imperfect flower, and as would seem by all reports coming under my notice, is the standard by which all others are judged as to size and productiveness, being adapted like the Concord grape to a wide range of territory. But with me the difficulty has been to find a perfect flower of equal merit to plant with it. The Jessie, which I have commonly planted with it, is extremely tender in blossom and disappointing in yield. The Marshall with me has also been a very shy bearer. Fountain but little better. The Wm. Belt has some merit, but is very sensitive to drought. Brandywine very satisfactory, and Plow City, though not fruited yet, gives excellent promise. In the case of raspberries there are fewer varieties to select from and seems to be the kind of fruit selected by the swindling fraternity with which to practice their swindly devices on the farmer. Perhaps because of the unreliability of the raspberry, as commonly treated by the farmer, coming as it does at a time when the drought is apt to be felt, its neglect in the matter of cultivation is about as great a mistake as to fail to plant it at all, and where practicable, should be

planted in long rows to facilitate cultivation for which I use a single horse cultivator and harrow, which indeed constitute my equipment for the garden berry patch and orchard alike. My acquaintance with the different varieties of the raspberry is very limited. I have discarded the Ohio as too sensitive to drought and put in its place the Older, which is very satisfactory as to size and productiveness, but has the fault of trailing too much on the ground, a hindrance to cultivation, but which I expect to overcome by running a wire over the center of the row fastened to stakes about three feet high and tying the canes to the wire. As to the blackberry, my experience has been confined to one variety, the Snyder, which to me is not entirely satisfactory, and while it may be the best for general planting on the farm at the present time a larger berry of better quality is wanted. A berry with the qualities for resisting the effects of the drought even at the expense of hardiness, for I sometimes think in the case of the farmer at least, that winter protection could be given at less labor and cost than protection against drought. I will say in conclusion do not begrudge the berry patch the most favored spot on the farm and commit the error of confining it to bounds within which nothing but weeds will thrive. But the same business attention given to it that is given to other farm interests will bring the same degree of success.

DISCUSSION.

Mr. Read—I would like to ask why the people of Illinois don't grow the Ancient Briton in preference to the Snyder? We swear by the Briton.

Mr. H. R. Cotta—Mr. Friend is not satisfied with the Snyder. I think the Ancient Briton is just what he wants. It is a larger and better and firmer berry, and is a heavier yielder; but it requires a rich soil and winter protection. Some winters it is not injured at all. Other winters it is injured. I have seen the Ancient Briton in Wisconsin; and I copied after the Wisconsin people, and have been successful with it.

The President—It is a question of latitude and climate and soil, and a good many other things. Mr. Cotta's soil is adapted to it.

MR. H. R. COTTA—I saw the Ancient Briton on sandy soil in Michigan, last summer. The bushes were just loaded with fruit, but there was not enough strength in the soil to mature the fruit. It did not grow to normal size, and could not ripen.

MR. TOOLE—Were you able to compare with other varieties in the same locality?

MR. H. R. COTTA—Yes, there were other varieties there that only set a little fruit, and that developed properly.

MR. WEAVER, of De Kalb—Mr. Friend spoke of the Jessie strawberry not being satisfactory. I have had occasion to observe that berry, and I find that it only does well on heavy clay soil. On anything like light soil it is not a success.

MR. READ—Although I know that many have not been successful with the Jessie, I want to say that where it does find a congenial home it is the one strawberry of strawberries.

MR. FRIEND—I have been a friend to the Jessie ever since I began to plant strawberries. It is a fine berry; of fine quality; it blossoms profusely; but it is so extremely tender, if exposed to early frosts or to the sun either, that the blossoms are not followed by fruit.

MR. HARTWELL—In looking over a list for strawberry plants, or any other kind of plants, select the cheapest in the list. It will always be the best. Those which are cheapest have been grown in such large quantities, because there is an immense demand. There wouldn't be any demand unless they were good. Take the Crescent, and the Warfield, and the Bubach. They are always cheap.

MR. TOOLE—In our locality we have found that an old variety, the Enhance, is very good for fertilization. It goes well with the Warfield or the Crescent. It is not so profuse in making plants as the Bederwood, but is a good hardy grower.

MR. HARTWELL—I have heard it recommended, but I am told it is uncertain; that under some circumstances it is a good berry, but under other circumstances is a failure.

PANSIES AND PANSY SEEDS.

WILLIAM TOOLE, Baraboo, Wisconsin.

It is not the object of this paper to encourage any one to undertake the raising of pansy seeds for profit, as experience has not favored any such thought, but there are good reasons why amateurs should, for pleasure and instruction, save some of the best; and it shall be our aim to consider points of interst to those who wish to hold to a standard of quality, existing varieties, to improve the same, or to establish new varieties.

Young plants seed most freely, giving the best flowers and, consequently, the best seeds. So we may better depend on early plants, started in the greenhouse or wintered under frames or other protection: or those from later spring sown seeds, which commence blooming by mid-summer and have been strengthened by having the blossoms picked off until late in August, yielding seeds from then to the close of the season.

Pansies seem to need the aid of insects for polenization, and are visited by them most freely, early and late in the season, when other flowers are scarce.

Seeds should be gathered just before the pods separate and close up. If neglected, they scatter about and, if gathered too soon, they are light and worthless. Seeds ripen in from sixteen to twenty-five days from time when flower was fully expanded and even less time in hot, dry weather.

The pods should be hung up to dry in little bags of cheese cloth, or other fabric not open enough to let the seeds through. The bag should not be too full of pods, and the drying needs to be closely watched lest they become mouldy and spoil before drying. If dried in open receptacles the seeds scatter in all directions, leaving very few in place. When convenient, after drying, the pods should be separated from the seeds with a sieve, and then crushed with a rolling pin to loosen the few seeds held fast. These also should be sifted, and then all may be cleaned by blowing. If saving a mixed lot of seeds, pull out all plants not up to your standard of quality. Allow no flowers to be picked from the plants chosen for seed-bearing, lest you find those most beautiful have all been picked, thus leaving the more common flowers for seed. Note also which plants seed most freely, and you will soon see that pansies "run out," as the saying is—because some plants give

most of the seeds until, in a few years, many kinds are crowded out by those more prolific and, as a rule, those most nearly like the original type are the ones to seed most freely.

If a market could be had for all the common pansy seeds that could be grown, there would be more profit in raising them at a low price than more choice kinds at a high price.

But as before intimated, the most pleasure may be derived from trying to raise the choicest, or to improve the kinds in hand.

Select only those most nearly your ideal of what you wish to attain to, rejecting all that are not up to your standard of form and color.

Perhaps it may be expected that something shall be said about artificial crossing or, as some would say, hybridizing, but the pansy shows so much tendency to change, in new directions, and crossing is so freely done by bees, it has not seemed desirable to transfer pollen by hand. In establishing new varieties or holding the old varieties to standard, we must contend with the tendency to change in some new direction, to mix with other varieties, and reversion to previous forms.

This tendency to reversion or avatism, as the animal breeders would call it, is the strongest influence we have to contend with, in fixing new varieties or maintaining old ones. In fact there seems to be a good deal of analogy between animal and plant breeding, and after a variety has once become established it does not seem so difficult to hold it as to perfect a new variety.

If seeds are sown from a plant showing a decided departure from the parent variety, there will often be a break to other kinds, showing little resemblance to the nearer parentage, but we must select whatever plants we find, having the characteristics we wish to establish, and the next sowing will give a larger percentage of what we wish to attain to.

An important thing to observe, is extra care of our seedlings. That, if possible, every seed may become a plant, for these new departures from what we already have are not likely to be so strong constitutionally as the variety may become when perfected; and if any plants fail to mature, it will almost certainly be those most like what we are striving to breed to, leaving with us those nearer like what we have bred from. I think this is the case with other varieties of flowers, that constitutional vigor becomes stronger as varieties are more fully established.

In trying to improve the pansy we must have in mind size, form, substance of petals, color and markings, and of

these qualities, form and substance are probably most difficult to hold. We may have a flower which is of satisfactory size, novel or beautiful in coloring, and yet persists in reproducing the long angular faces, such as the artists love to show in pictures. I have in mind to bring out a unique or grotesque class of pansies, when it becomes convenient to grow such far enough from others that they may not influence our standard kinds.

In caring for a single variety an amateur has an advantage over the professional grower, who cannot well isolate seventy or eighty varieties sufficiently to avoid all danger of mixing. We have this advantage of breeding to kind, that through persistent selection, a variety comes reasonably true in face of surrounding influences.

Occasionally we find individual flowers differing from others on the same plant, such as tending to doubleness, two flowers on one stem, and sometimes decided difference in markings. I have never tried to see if these could be reproduced in the pansy, but some years ago an experiment with Phlox Drummondii taught me that these individual flower differences are persistent. Noticeing two double flowers in one cluster, they were marked and protected. The seeds from these two flowers were sown the next year and we had from them several plants producing a good sprinkling of double flowers.

Those wishing to derive pleasure and wisdom from experimenting with new varieties, need not confine themselves to pansies. Other flowers offer equally good opportunity for experiment. There seems to be no limit to the possibilities of the Petunia, which we had only in two colors about forty-five years ago. The Zinnia would be a much more popular flower if we had more of the best.

And such opportunities we have for improvement among our native wild flowers. The native Phlox of our prairies, Phlox pilosa, shows enough tendency to variation to encourage sanguine expectations.

The wide range of color shades already common to our native Lilium superbum, persuades us that we may yet have its flowers in wonderful richness of color. And then we have native asters and golden rods. What marvels of beauty might be created from the asters.

The Nova Angla aster may be had in bloom the same season of planting the seeds. And it is probable that most of the other species could be treated as annuals, thus giving opportunity for rapid improvement through selection.

DISCUSSION.

MR. PURVIS, of Chicago—I would like to ask you how you succeeded in keeping white pansies from coloring? Mine go back to some other color.

MR. TOOLE—I will say that either mine or any other that I can buy will have some mixtures, but not many. My Snow Queens and some other varieties come tolerably true. New varieties not bred up to the proper point will mix with others more readily.

MR. PURVIS—I have given up buying the seed.

MR. TOOLE—I wouldn't want to encourage any one to go into pansy seed expecting to make money; but a person may derive a great deal of pleasure from the work, if he takes an interest in it.

THE PRESIDENT—Did you speak of the matter of soil for pansies?

MR. TOOLE—I had said so much at other times and in my catalogue that I did not go into the matter. It would take a good deal of time to say what is said in my catalogue in regard to cultivation.

MR. PURVIS—I want to tell you of a little mistake that I made last year in pansies. I live near the Chicago, Burlington & Quincy yards and can get down there what is thrown out of the stock yards. It has been mixed with sand and it is quite rich, and I thought it would be the ideal soil for pansies. I had them on the north side of the house. I used that mixture of sand and manure well rotted a foot thick. They didn't seem to do well. In the first place I wanted to fill up my yard, and I threw in sod where I had my pansies and then put about six inches of this mixture on top. It was probably two-thirds soil.

MR. TOOLE—I think you got too much fertilizer. I would say perhaps you didn't mix it with enough soil.

MR. PURVIS—I had an idea that you couldn't fertilize pansies too much.

MR. TOOLE—They are a hardy feeder, but like other things they could die of dyspepsia where you give them so much

manure, if they get more than the necessary amount of water. I think your pansies would do better another year in the same situation without any additional fertilizer.

MR. READ—How far apart do you think it necessary to isolate different varieties to prevent their mixing?

MR. TOOLE—So far that the bumble bee will not go from one kind to the other. I think bumble bees work on them more than honey bees. To make sure you should put them so far apart that no insects will pass from one to the other.

MR. PURVIS—That means about four miles in the case of bumble bees.

QUESTION—Will pansies grow in an entirely shaded place?

MR. TOOLE—My experience does not favor growing in the shade the whole length of the season. However, I wouldn't have them on the south side of a building. I don't want a hot situation. I like a gentle eastern and northern slope, away from any trees and generally away from a building. In the case of the pansy the tree is a hard weed to contend with.

In regard to the matter of the substance of the color, you have noticed that some varieties have a rich velvet surface, but in others there is not enough back of the surface to support the coloring. There is nothing in art that can equal in richness the color tone that you get in the pansy.

QUESTION—Would you advise the use of a fertilizer, sold by dealers, for a pansy bed?

MR. TOOLE—I have had no experience in that way and would rather fear to favor it. In any place of the size of DeKalb there is a chance to get some well decayed manure. There is this advantage in the manure that in addition to furnishing the plant food it helps to keep the ground in a mellow, moist condition, whereas with the commercial fertilizer the ground will keep so firm and close in texture that it will not answer for the pansy.

QUESTION BOX.

QUESTION—In transplanting forest trees how large can they be and live?

THE PRESIDENT—This topic has been suggested by some one in the interest of DeKalb. We will be glad to have it answered. I have passed it over to Mr. Periam to answer.

MR. PERIAM—I have had a good deal of experience in transplanting forest trees. The three trees that will succeed best in smoky cities, especially in Chicago, are the elm, the cotton-wood and the willow. They do succeed. They can stand the gas in the ground to a greater extent than any other trees. The evergreen must never be planted in places where there is a dense carbonaceous smoke. In a locality like this there is no reason, in my mind, why the hard maple or sugar maple should not do exceedingly well, if it were not for the fact that they grow very slowly, that they don't reach the perfection of form except in a generation of growth. The objection to the soft maple is the same as with the black locust; that insects attack them to such a degree that the trees are always defaced. Another thing against the soft maple is, that as a rule, they are crotched and break down in the crotch in high winds. There is the same difficulty with the elms, in perhaps a less degree. Our best elms show this tendency to crotches all the way from the ground. But the elms will not so easily break down at the crotch. They are made so firm by nature. Another thing, the elm gives or yields to the wind and is not twisted off, except by a wind that will twist off almost any other tree. You will find in all forms of the elm that the older it gets the more beautiful it is, while with the evergreen the older it gets the more ragged it gets, as in the case of some people. In a wild country it fits in exactly with the landscape. The cotton-wood I would not advise; it is one of the most villainous things to throw out cotton that we find in Chicago. There are cultivated fields of the willow that are most beautiful. In relation to the cotton-wood it is really as easy to have a cotton-wood that will not throw out cotton as one that will, if you start right. The peculiarity of the cotton-wood is that the pistil is borne on one tree and the other is staminate; and, if you plant a cotton-wood that is of the staminate variety, you don't get any cotton, because it does not bear the seed;

it simply fertilizes the seed-bearing plant. And in that case you have a standard plant that is rather more beautiful than the others. There are some varieties of trees that do well everywhere and will stand a considerable amount of this black smoke from the soft coal. You might do well with the hard elm and the sycamore maple. The latter are beautiful trees. It is the variety of hard maple that grows fast. There is nothing more beautiful than the basswood or the American Linden, and it stands first rate in the country districts.

Mr. Groh—I want several Linden trees, and I want to know if any one can tell me where to get them.

Mr. Periam—You can get them in any nursery.

The President—The question is, how large can you transplant?

Mr. Periam—Any farmer can transplant an elm tree six inches in diameter.

The President—They have a desire to put large trees here in connection with a state institution.

Mr. Periam—I think I had better suggest to you to send for Mr. Peterson, of Chicago, who knows how to transplant large trees and has the means of moving them. Mr. P. S. Peterson is the great forest tree man of the United States. Mr. Peterson will transplant a tree a foot and a half in circumference and make it live, by watering it and putting a good deal of clay under it, in our sandy Chicago soil. The second year is the most vital to the transplanting of any tree. It costs more to set large trees.

Mr. Read—I am not much acquainted with the cottonwood, but the Carolina poplar is one of the most rapid and vigorous growers we have. It does not sprout as most poplars do. I can heartily recommend the Carolina poplar. If you are going to move big trees get somebody who knows how. There is not one man in ten thousand who can move a tree over three inches in diameter with success. The ordinary, everyday individual may set small trees, but he ought not to meddle with big ones.

The President—Is the tulip tree hardy in Chicago?

Mr. Periam—It was on my farm in the swamp regions between Chicago and Michigan City, but if you want to see the tulip tree in its grandeur you will have to go down to Southern Illinois.

Mr. Hartwell—I have seen beautiful tulip trees in Central Illinois, a hundred miles south from here. I set out half a dozen when I first came to this country; and they froze to the ground the following winter.

Mr. Periam—It is the nearest relative to the magnolia that we have.

The President—How about the cucumber tree?

Mr. Periam—It never was hardy with me. Mr. Edwards and Brother Bryant, and some other gentlemen that I know of, have them; but the conditions that surround them are peculiar. Mr. Bryant raises a very fine pawpaw, and the persimmon grows there, and they get the fruit whenever it is in season. In Bureau country and some adjoining places there are small, narrow bottoms which are very congenial to some of these trees that won't grow out in the open.

Committee on Awards of Premium on Fruit Reported as Follows:

Best collection of apples—First premium, J. V. Cotta, Nursery; second premium, D. J. Piper, Forreston.

Best collection new apples—First premium, J. V. Cotta, Nursery.

Your committee would call especial attention to this collection. All of these are from Mr. Cotta's experimental station and are of great interest as showing what is being done in that line in our station work.

Best four varieties winter apples for market—First premium, J. V. Cotta; second premium, D. J. Piper.

Best four varieties winter apples for family use—First premium, J. V. Cotta; second premium; D. J. Piper.

Best plate variety not named in list—First premium, J. V. Cotta; second premium, D. J. Piper.

Best plate Willow Twig—First premium, D. J. Piper; second premium, J. V. Cotta.

Best plate Grimes' Golden—First premium, J. V. Cotta; second premium, D. J. Piper.

Best plate Snow—First premium, N. C. Berger, Polo; second premium, J. G. Cotta.

Best plate Pewaukee—First premium, J. V. Cotta, Dixon; second premium, J. L. Hartwell.

Best plate Ben Davis--First premium, J. V. Cotta.

Best plate Salome—First premium, J. V. Cotta; second premium, J. L. Hartwell.

Committee on awards—Arthur Bryant, William Toole, J. Friend.

COMMITTEE ON AWARD OF PREMIUMS ON VEGETABLES REPORTED AS FOLLOWS:

Irish potatoes, best display—First premium, D. J. Piper.

Irish potatoes, best half peck—First premium, D. J. Piper; second premium, D. J. Piper.

Sweet potatoes—First premium; N. C. Berger, Polo; second premium, D. J. Piper, Forreston; third premium, D. J. Piper.

Committee on awards—A. J. Sweezey, G. M. Deland, Lewis Ulm.

EVENING SESSION.

Mr. H. R. Cotta occupied the chair as President pro tem.

PLEASURE AND PROFITS OF FRUIT GROWING VS. GENERAL FARMING.

B. F. WYMAN, Sycamore.

In discussing the question of fruit culture against general farming, a little of my own experience will demonstrate more forcibly than any other way, the advantages of each, as seen from my standpoint. My early life was almost wholly spent upon the farm, and early learned, that, while farm life had many pleasures, it also at that time had many arduous duties that called for well applied and long continued muscular exertion. While not deficient in muscle, I had no great desire to expend a very large amount of it, without seeing a fair equivalent for its expenditure. When I commenced farming operations for myself, I determined from the start to test the matter, and ascertain as accurately as possible what the profits of the business were. I kept an account with each crop grown and with each kind of stock raised, and after several years experience, discarded everything that I did not feel practically sure of producing a profit. I charged for the

land just what it could have been rented for per acre. Charged current rates for all labor expended, and credited market prices for the crop produced. By reference to my books for the year 1871, I find the following results, with practically the same conditions continuing several years. Afterwards I find that a field of corn credited a loss of $49.00, a field of flax made a profit of $5.48, a field of barley made a loss of $5.48, a field of oats yielded a profit of $24.58, and a small field of wheat made a loss of $6.78, while a field of hay gave a profit of $80, an acre and one half of potatoes gave a profit of $80.06, and a five acre field of hops yielded a profit of $136.11. Hops should not be considered as they are not a general farm crop. Prices that year were as follows: Wheat $1.00, oats 22c, barley 52c, corn 28c, flax 80c. per bushel, and hay $5.00 per ton. A lot of two year old heifers showed a profit of $39.95, while a bunch of two year old steers made a loss of $17.00. Cows that year and several years thereafter, failed to make a profit. (They were not kept, however, according to Mr. Gurler's methods.) Sheep and hogs were profitable some years and unprofitable others.

Several years experience demonstrated satisfactorily to me that to be successful in general farming, an unlimited supply of muscle was one of the chief requisites towards success, and its liberal expenditure, properly directed would enable one to just about make fair wages for the labor performed and a fair rate of interest on the capital invested. Such has been the average condition of the business during the last twenty-five years, but like all other industries, it has its periods of success as well as depression. Stock raising has existed from the time that Adam was turned out of Eden, and grain raising nearly as long, and it is evident from the condition of things, that general farming must continue for many years to be the chief occupation of a large part of the farming population.

Always having been a great lover of nearly all kinds of fruits and vegetables, and with a decided taste for horticulture, I early in my farming life planted a liberal supply of fruits for family use, and seldom has there been a year in the last twenty-five, in which we have not had an abundant supply, a supply that far more than compensated the cost of production. The following is a list of fruits and vegetables produced on the farm this year. I enumerate vegetables because so closely allied to fruits, and so indispensable to the family. Apples, cherries, crabs, strawberries (eight varieties,) raspberries (black and red,) blackberries, grapes, currants and

gooseberries, six kinds of musk and three of watermelons, asparagus, peas, tomatoes, string beans, lima beans, onions, sweet corn, carrots, cabbage, radish, beets, salsify, lettuce, squashes, etc. I enumerate this list of fruits and vegetables, all easy of cultivation, for the purpose of showing what can be accomplished on a very large proportion of the farms of Illinois. While my purpose has been to raise an abundant supply for our own use, we frequently have quite a surplus of some of the varieties, and these the boys dispose of in the local markets. Their sales this year aggregated nearly two hundred dollars, or one hundred and fifty dollars besides the expense of picking, crating and marketing. When one considers the luxury and enjoyment derived from an abundant supply of strawberries, raspberries and blackberries, all fresh from the vines and supplemented by good Jersey cream and interspersed during the season with the other fruits and vegetables enumerated above, then we begin to have some appreciation of the pleasure and luxury as well as profits of fruit growing, I say profit because nearly every farmer can with but little outlay in money and labor, produce a large part of the best kind of living for his family. While it would not be prudent for every farmer or any great number of them, in this part of the state at least, to engage in fruit culture, to the exclusion of other branches of farming. It would be the best kind of business prudence for nearly all of them to pay very much more attention to it solely for the profit to be derived in the saving of family expense. I have had little experience in fruit culture wholly as a commercial pursuit, but from having had a surplus to sell nearly every year, I am enabled to present some figures, in a small way as the profits to be derived. We had this year one-fourth of an acre of blackberries from which was sold fifty cases of sixteen quarts each, at one dollar per case. The cost of cultivation, crating and marketing was $25.00, leaving a profit on the one-fourth acre of $25.00, besides eight or ten cases used in the family, or at the rate of more than one hundred dollars per acre, enough to buy ten acres of good corn, or as much clear profit as there would be in fifty or more acres of corn. If sold in home markets, strawberries, raspberries, grapes and melons will yield equally as well. The consumption of fruit is constantly on the increase, and is only limited by production and price. In the warmer months of the year, fruit and vegetables should largely supercede the use of heavier foods so common on so many tables. The use of fruits in their season are much more grateful to the palate,

satisfy ones appetite, better enables one to withstand the heat of summer, are much more healthful, save expense in doctor bills, and in other ways contribute to the comfort and happiness of the family.

The shipping of the most perishable of small fruits to central markets to be distributed to the smaller towns is expensive in transportation charges and commissions, and if shipped in hot weather its rapid detoriation causes much of it to be sold below the cost of production, and much of the fruit so sold is unfit for food and dangerous to health.

Fruits will grow nearly everywhere in Illinois, and as most farmers live near enough to some village or city, to deliver fruit the same day it is picked, they should engage in its culture to the extent of a liberal supply for their own families, and a surplus of the most perishable varieties sufficient to supply the demands of the smaller cities and villages. By so doing it can as truly be made a source of income for the farm, as any other branch of agriculture. It is deplorable that so many people that have all the facilities for raising fruit, have so little of it, and all though a mistaken notion that it is difficult and expensive to produce. Fruit culture is a branch of agriculture that should extend its benefactions to every hamlet and home in the land. Its private importance can hardly be computed. It is one of the most inviting fields of all farm culture, and opens to the business enterprise of the farmer the grandest and most fruitful possibilities.

DOES IT PAY TO BOTHER WITH FLOWERS?

Mrs. Clinton Rosette, DeKalb.

We all love flowers—or should love them—and are ever searching for more knowledge regarding their peculiar characteristics and dainty habits; we do not need to be convinced of their beauty. Few persons who live in a city, or for the matter of that in the country either, are aware of the amount of pleasure which can be derived from a very small garden.

To be successful requires a knowledge of the habits of plants and the best way of cultivating them, and I also think you must have a taste for the occupation, and the industry to perform the labor to bring the cultivated plants to perfection. No sluggard can be a success with flowers.

If you have a love of nature, and do the work for healthful exercise or recreation, you very soon acquire the necessary knowledge by practice, experimenting, observation and reading.

Don't ever think your garden too small to make a success of flower culture. Every spot and corner can be utilized. If your neighbor has built an unsightly line of fence (they sometimes do) cover it with morning glories and make it a thing of beauty for the whole summer time. Mark the odd carriers with stately hollyhocks, and don't forget the fragrant and old-fashioned four-a-clock, which should be close to your kitchen porch. What odor, and what childhood memories these old-time flowers bring to you as you sit in the evening twilight resting from your labor. Have you ever felt, when some admiring friend has expressed a preference of some favorite in your garden, the thrill of pleasure it gives one to gratify the friend by plucking the bloom from among your many pets, and making another heart glad beside your own? You have received more pleasure even than the recipient. No flower, however humble, no trailing vine or blooming bush, but appeals to the heart of a flower lover.

I do not mean to treat this subject from a commercial standpoint, I am not posted as to amateur's work in that line, but I do know in dozens of ways it pays to bother with flowers. You live in touch with nature and renew mental and physical health by contact with the earth. If you have artistic tastes you can develop and eLlarge upon them in arranging flower beds and grouping of colors. We have many flowers lovers in DeKalb who, during the past summer, have sent baskets burdened with sweet blooms to the numerous hospitals in Chicago. Ask these women if it pays to raise flowers. Only a blossom but it brings happiness to the heart of many a poor sufferer—pain forgotten for the moment, and white wards brightened by these almost human visitors. You who have no taste in this direction, cultivate it at once and carry your bloom into the sick room and see how soon you feel repaid for the effort. Know the comfortable feeling of having carried a bit of sunshine and God's beauty to some forlorn heart. If more housekeepers could be impressed with the fact that a window, even of simple blossoms, gives more of beauty, more of culture, and more of a refining influence to their home than velvet carpets and padded furniture there would be more time spent with flowers. What an atmosphere of brightness surrounds a home filled with them. Teach your children to see the beauty in them. One lady remarked to me recently when I was admiring her

numerous pots of flowers and thrifty vines, "We cannot have costly furniture in our home, but we can brighten it with bloom, and we will have them," and flowers they had, and I thought of the daily lessons taught those children in the home, of a love of nature and these same children showed more of refinement than many in luxurious homes. I feel sure the flowers were in part the teachers. There are so many homes in our land that might be glorified, so many lives made bright and cheery that are now dull, if flowers could only gain a foot-hold in heart and home. You who are more fortunate than others give generously of your bloom, they will be the better for frequent cullings. You have a store of roots, bulbs and seeds, give to your neighbor and try and cultivate in them a taste for pretty gardens and thrifty house plants.

The secret of one's success must be due to the thoroughness and care with which everything in the garden is done. The old familiar maxium "that whatever is worth doing at all is worth doing well" seems to be the rule even with the amateur. The spirit of flower growing as carried on to-day is what one would catch. Under each act, each bit of practice, there is an underlying principle. Hardly an amateur but what is experimenting. They work with a greater knowledge and zest because of the many helps received from weekly and monthly magazines published for their benefit and the interchange of thought and experiences through the horticultural societies and flower shows. It takes time, even years to get a garden up to its best, but do not be discouraged, study and work and you will accomplish what you desire—perfection. No one of intelligence now regards it as a waste of time to cultivate flowers, and it is recognized and admitted that they have their place and value in the economy of the world. We are making great progress in our appreciation of the actual educational value and refining influence of flowers and their cultivation is becoming more and more a part of our education. Parents happily are growing wiser and are interesting their children in the work of nature. They find that the little flower garden may be made a distinct educational force in boy's or in girl's life. A boy is generally a "hurly-burly" (wouldn't give much for him if he wasn't). He gets rid of a deal of nervousness every day by racing the streets. He might better expend some of his pent-up energy in a flower garden. If you begin early you will find that the "harly burly" boy is not altogether dead to the beauty and influence of flowers. You who are older do your work intelligently and inform yourselves regarding the most

desirable location for everything you are going to plant. Don't trust anything to luck when it comes to the cultivation of flowers. It is a mistake to expect your flower garden to shift for itself, even when you have given it a good start. You must give it proper attention or it is a failure. Don't allow your enthusiasm to exceed your good judgment in the matter of planting and caring for your flowers. It never pays to buy cheap seeds, bulbs or plants. Always patronize a reputable dealer in this line, and do not "woman like" be chasing after bargains. It won't work any better in flower seeds than it does in other things. We have flower gardens in DeKalb that are loaded with bloom in the early season but in midsummer grow seedy-loooking and shabby, and the reason is apparent. The owner never thought of picking a bouquet for a neighbor or sick child, and even for their own home decorations paper flowers seemed to have the preference to the ordinary blossoms which they possessed in such profusion. They were too stingy to pick them, and the flowers soon showed they were slightly treated. The more blooms you pick the more you will have.

Ruskin has said "that flowers only flourish rightly in the garden of some one who loves them." They will not flourish in the garden of those who neglect them. They are an unfailing source of happiness and the means of making home attractive and lovely. Some people go into raptures over flowers but never have the time to cultivate them in their own homes or gardens. They are too busy to bother with them. It is not a waste of time to cultivate them. Don't use the expression "no time for them." Take time for their care. I know you will feel repaid a hundred fold. Let a little of your foolish "fancy work" go by, and get rid, in your flower garden, of that tired, wornout feeling you have. A little thought and time will accomplish wonders. Improvements are constantly at hand. One only needs to keep one's eyes open, and then, what an inspiration to one's neighbors, and sometimes to a whole neighborhood one thrifty flower garden becomes.

I want to say a word or two in favor of the "flower mission." Help them out all you can from the abundance of your own flowers. They will make good use of all the flowers you will give them. This may not seem to many like a very practical form of philanthrophy, but those who are engaged in it, and who are, therefore, best fitted for expressing an opinion on the subject, declare that great practical good results from it in addition to the undoubted pleasure the flowers give to those who receive them. This is true of all

philanthropic work, "it gives its own reward either in self-forgetfulness, self-discipline, knowledge of the world, or appreciation of one's own advantages." Every happy, successful, prosperous man owes some duty to those less fortunate than himself. Every woman who has a flower garden owes something to the poor woman whose lot is so hard that she has not a foot of ground in which to cultivate flowers of her own. The strong and well owe some duty to the sick and feeble, and nothing can so brighten a sick room or bring such smiles to a sick woman or child as a bouquet of beautiful flowers. No one who has given the matter study questions the value of the work done by the flower mission. If not an actual worker, give at least your sympathy and some of your flowers, and in this way you will find one of the many ways in which it pays to raise them. There are "shut-ins" in every town. We have many of them. Make some one of them happier by a part of bloom from out of your abundance. Even trifles are worth doing.

Get out into the sunshine and among the blossoms, it will put new life into your blood; it is an occupation so healthful that it has given a new lease of life to many; it is a pannacea for tired bodies, weary brains and sorrowful hearts.

Eternal vigilence is the price of success. Unless one is willing to give personal care the garden, as a rule, must go. It is but for the amateur to be rather modest and conservative in his attempts as a flower grower. You must be willing to admit your ignorance and be willing to learn, but care they must have, and intelligent care at that. Begin your garden work with the fixed determination to keep it up. Begin right, do your full duty afterward and your reward will be great. It will put on its appointed beauty and glory if you make it a love-kept garden instead of a slighted garden.

"Do you know the slighted garden?
The ground is hard and dry:
The lilies fade before their time,
The rose leaves scattered lie;
Unchecked the rank weeds flourish,
The winds unhindered beat,
The fragile stems are trodden low,
By rough and careless feet,
No hands are busy tending them,
No hearts with pity move,
And so they slowly droop and die
For lack of love."

"Do you know the love-kept garden?
The pleasant proofs are there;
Love's hands are always busy,
And the loving heart takes care;
Affection's eyes read quickly
Each little flower's needs
Of sunshine and of shelter,
And deliverance from weeds:
And gentle fingers trim the plants,
And cool drops from above
Steal downward to the very roots
And speak of love."

CURRANTS AND GOOSEBERRIES.

PHIL STRUBLER, Naperville.

I have grown small fruits, especially gooseberries and currants, for the past fifteen years, and for the last eight or ten years have made the growing of currants and gooseberries a specialty.

Currants and gooseberries are propagated by layering and cuttings. The currant is the easiest thing to propagate by cuttings of anything I know of. Make the cuttings from September up to the time it freezes up, five or eight inches long. These should be made from new shoots of the years growth. Tie in convenient bundles and bury in the ground in a dry place or where water will not stand until spring. Then plant in well prepared soil leaving above ground one or two eyes, being careful to firm the ground well around cuttings when planting; or still better, cut and plant in September, and if the ground is moist during the fall you will have well rooted plants the following spring. Cuttings should be planted four to six inches apart in the row, and rows the distance apart to suit the planter.

Gooseberries are not so easily grown from cuttings, and we grow them entirely by layering, which is done by bending down and pegging to the ground bushes of the previous years' growth or any other, the former the best. Then partially cover them, tops and all, with rich soil, the richer the soil the better. After they have grown in this position one season there will usually be a half dozen or more of well-rooted plants ready to put out in the nursery row or planted where wanted.

Of late years I plant both currants and gooseberries in rows six feet apart, and distance in the rows five to six feet, and cultivate with horse power both ways. This saves much

needed hoeing by hand, and in a few years' growth the bushes will nearly touch one another. Planted this distance gives plenty of air and light, which is necessary for the development of good fruit.

Cultivation is necessary about once a week as soon as the ground is in condition in spring till about the middle of July, thereafter, often enough to keep down all weeds about once in two weeks.

After plants are three or four years old they need annual pruning for fine fruit. There is no set rule to go by, one must use his own judgment. A good rule is to prune so as to have the main branches and limbs from four to six inches apart. This is necessary for the development of good fruit. As a rule, don't be afraid to prune too much.

I find the best material for mulch to be coarse stable manure, hauled when fresh direct from the stable and spread about two inches or more deep all over the ground among the bushes. When properly done during the fall and winter months, it keeps the ground moist and cool and the weeds from growing during the fore part of the following season and enriches the soil and gives the fruit a start that nothing else can. Fruit mulched in this way needs no cultivation the following spring until the latter part of May or fore part of June, when mulch may be plowed or cultivated into the soil, where it will soon decay and keep soil in the finest condition for the development of the best of fruits if cultivated often enough during the season thereafter. The same rule of mulching will hold good with other fruits such as blackberries and raspberries.

As soon as gooseberries have grown to their full size we commence picking and sending to market till the end of the season, which lasts with us about thirty days.

The picking and marketing of currants are about the same as gooseberries, with this exception, that we don't commence to pick currants till they are ripe.

The growing of currants and gooseberries has always been considered quite profitable, but for the past two or three years has been the reverse. The average price per case of ten quarts for currants the past season was about 70 cents. A few years ago we received for same $1.50 to $2.50. Gooseberries were still lower the past season, when they averaged in the Chicago market about 60 cents per case, and I know of some that were sold for 40 cents per case.

But we look for better things in gooseberries and currants in the near future.

RESULTS OF PLANT VARIATION.

JONATHAN PERIAM, Chicago.

From the Bible we learn that all living things are reproduced each after its own kind. Science says that like produces like. Neither the divine nor the scientific law uses the word "exactly," in fact, I confidently assert that no two plants nor two animals of a given species, nor no two human beings were ever exactly alike since the time of their first appearance on earth, nor will be during their continuance of life on earth. It is a law of nature, since if reproduction were on exactly parallel lines, there could be no improvement, no breaking up into genera and species, much less into variations and varieties of species, and in this lies the the superexcellence of the divine, as it is, of course, the scientific law.

By dissection of plants and animals, and no less the human body, will this be found true as revealed by the microscope. Nay, I may go further, and state that the human, the highest type of created being on earth, may be traced step by step from the ovum up to birth as having gone through all the gradations from mere protaplasm (something first moulded; the soft, nitogenous lining, or contents of cells), along up to the ovum, and thence to the living being. Nay, more! In this gradation the child passes through all the gradations of life from the lowest germ to the supreme of this earth's inhabitants. But while man passes through all the stages of inferior life to reach that in which he is ready to assume his spiritual being, the purely animal, stops short in descending stages, until one arrive back to a spungy mass in the jelly fish. Nay, more, we may trace this scale of life back wherein science is at lost to decide, whether the subject be plant or animal, or the deviding line between that which has independent motion or is fixed through life to one spot. It is also certain that, geologically speaking, the earth has pass to its present splendor through vast epoches of time, subject to destruction and rehabilitation many more times than we can follow, but after each successive over-embelment, a better and better world, until with the first appearance of plant life in the shallow and torpid waters, and thence the evolution of higher and higher species of plants, animal life became possible in the ocean, and thence plant life and animal life covered the face of the then earth risen from the waters. Without variation of plants there

could not be diversity; without evolution in plant life there could have been no animal life except of the lowest type. Marphology teaches of the science of form in the organic kingdown. Biology of the sicence of life. It is only within the last century that science has made plain some of the stumbling blocks in the allegories of the ancient writers of scriptures and that of the peyerns anti-dating mistery.

Henry Drummond, in his latest work, "The Lowell Lectures on the Ascent of man," says, In the "Monographs of His and Mind;" The embryology of man has received just expression; Darwin and Haeckle have traced the origin of the animal body; the researches of Romaine mark a beginning with the evolution of mind; Herbert Spencer has elaborated theories of the development of morals; Edward Caird of the evolution of religion.

A multitude of others supplementing the contributions of these authorities, verifying, combatting, criticising, rebutting, have brought to light rich problems, and already every chapter of the bewildering story has found its editors. Many of our most able divines acknowledge that the science of to-day in no wise seeks in new ways to discredit the dogma of Divine Creation, but rather that it verifies the truth and simplicity of the Creator's wonderful law. And this brings us to the final consideration of variation and its results. It is my apology for asking to have changed the original theme given me, "Variation and Varieties," to "Variation and Its Results."

I found upon receiving your program that addresses must be limited to fifteen minutes. I have cut my speech accordingly, trusting that my time may be extended five minutes, my propositions have already been made, so that I have now only to show the results of variation, in clothing this earth with all things profitable, and will state that the Creator has made all things beautiful as well under his Divine law, and henceforth deal kindly with plant life.

In the succession of plants the most obscure plant that has come down to us as fossil had its own beauty and adornment, the higher orders of plants had their special beauty, those most necessary to the sustenance of man, to the artist's eye are often less beautiful than the so-called inferior. We see it to-day in the obscure and diminutive plants and flowers. Many ages must have elapsed before man was intelligent enough to practice more than the rudest natural selection. Then came cultivation and artificial selection, and from obscure and almost impossible original types man has origin-

ated all the cereal grains, from the millets to Indian corn, and of the present wonderful types and varieties. So long ago did this variation and breeding up commence that there is no history thereof but only the merest tradition.

Coming now to varieties that reproduce themselves fairly true from seed. First the variation from an original or allied type, either naturally or artificially caused by hybridization. The seed is planted, and by continual planting and careful selection the type is fixed, and we have a constant variety. But here again comes in another natural law, the law of reversion, carrying the plant or animal back toward the original type from which it sprung. Without careful cultivation and feeding this will invariably occur, and whether in plant or animal and in less time than it took to breed it up to the human idea of perfection. And this has given rise to the scientific dogma, that it is more difficult to hold a plant or animal to the ultimate point of perfection than it was to bring it up to that plane.

Hybrids, whether of plants or animals, are notably sterile—all partially so, some entirely so Hence in many plants propagation is continued by grafting, budding or by cuttings. In the case of plants having fleshy roots, tubers, carms, etc., as many of the crucifera, potatoes, cannas, dahlias, the crocus, etc., the holding of varieties is comparatively easy, but even hybrids and varieties of these will soon degenerate unless care, good cultivation and enriched soil is given them. The canna, most magnificent of budding plants of to-day, will give poor satisfaction in bloom and propagation if not freely watered. If they cannot be given their natural conditions it were better that they be not cultivated. And yet the natural type of this most brilliant and magnificent plant, both in leaf and flower, is the old time Indian shot—*canna Indica*. For within the present generation they were classified as having thirty-eight species and some varieties, being all stove (conservatory) herbaceous perrennials. And indeed it is only since the Columbian Exposition in Chicago that the most magnificent varieties have been propagated.

What then has been the lever by which all this product of vegetable wealth has been procured, enlarged, hybridized, refined, beautified, and perfected? It is the invention of printed letters, by which the inventions and thoughts of scientific minds could be spread broadcast throughout the civilized world by which later scientific minds were enabled to profit by the intelligence of those who had gone before. The inductive method of reasoning, asserted by Bacon,

brought light out of the chaos of the deductive methods of former philosophers, and real progressive, actual science became the mainspring of thought of the leading minds of the world.

In the domain of agriculture the seeds of specially fine fruits, vegetables, plants and flowers were planted and the best resultants from these again planted, and so in successive generations a pedigree was established. Later we have learned to hybridize species and cross fertilize varieties, and to perpetuate them by careful selection until they came measurably true, and to propagate by cuttings and otherwise those susceptible thereto wherein fertile or no seeds were produced, as in the case of perfectly double flowers, and this has become so easy and well known that the mere tyro in vegetable physiology can soon learn to compete with the best. And yet to-day no man knows the law governing variation, perhaps never will, so as to produce earnestly sought variations at will. We know that variation is produced in certain lines by soil, climate, sunshine, heat, cultivation. We know that by care, cultivation, selection and extra feeding that a species will "break," as cultivators say into a new farm, that once it has broken it is comparatively easy to continue the sport further and further from the original type. We know that we can produce varieties of a given species by cross fertilization. We can even fertilize some species with some other species of genera. The microscope has revealed that the pallen grains of species differ in size and that the seminal tubes so vary also. Hence we may conclude that the pallen grains of a species must be of a size to enter and pass down the seminal tube of the flower to be operated on. We also know that to make cross fertilization successful we must protect the female flower from contact with its own specific pallen, else our efforts are vain, for here the law of heredity comes in, the pallen of the similar species being prepotent. And herein lies the "art that doth mend nature."

OBITUARY, ROBERT DOUGLAS.

The President—It has been customary in this society, when any of its members are called away, to draft resolutions in memory of the departed. During the past year one of our members has been called away, but not having the data we have been unable to prepare resolutions, but Mr. Periam will make a few remarks on the subject.

MR. PERIAM—I can hardly do justice to the memory of one of the greatest horticulturists that the state of Illinois has ever had, Robert Douglas. He was a genuine Scotchman with what is called the Scottish bur. He is the man who has helped to clothe these prairies, extending from the Allegheny mountains beyond the Rocky mountains to the Pacific coast, with seedling evergreens. He raised them year after year by scores upon scores of millions of plants. That is one of his glorious works. He was one of the demonstrators of the results of variation in the Graniferous tribe. During his whole life, until at last he was suddenly taken away at an advanced age, he was continually at work in the domain of forestry. He did not originate varieties and make them constant to their kind of variety, yet he did with his great eloquence and his profound knowledge of botany assist very much in inducing people to plant. This is all I feel able to say to you to-night in regard to Mr. Douglas, but I will comply with the request of the society and will prepare some further data for its benefit.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Your committee on final resolutions beg leave to report as follows:

WHEREAS, the success of our annual meetings depend to a great extent upon the interest taken by the people in the locality where they are held; therefore, be it

Resolved, That the grateful thanks of this society are hereby extended to the people of DeKalb and vicinity for their generous hospitality and kindly assistance so cheerfully rendered on this occasion; to Mr. Rosette for the use of the fine hall furnished; to the decorating committee for the tasteful manner in which the hall was decorated for our use; to those who furnished us with most excellent music; to the Ladies' Club of DeKalb for the fine display of canned fruits; to those who have so generously offered prizes for display of fruits and vegetables; to the press of DeKalb and other cities who have representatives here or have given notice of our

meeting; to the proprietors of the hotels for courteous treatment received, and lastly to the retiring officers who have so ably discharged their duties.

O. W. Barnard,
Philip Scott,
Committee.

The President pro tem—I wish to say to the citizens of DeKalb who are gathered here to-night that we all feel deeply grateful for the many acts of courtesy we have received at your hands, and we will return to our homes with kindly recollections of the pleasant times spent here among you.

PROCEEDINGS

OF THE

TWENTY-FIFTH ANNUAL MEETING

OF THE

HORTICULTURAL SOCIETY

OF

CENTRAL ILLINOIS.

Held in the Chapel of the University of Illinois at

Urbana, Illinois, December 18 and 19, 1897.

REPORTED BY

H. L. DOAN, Secretary, Jacksonville.

OFFICERS FOR 1898.

PRESIDENT.....GEO. J. FOSTER, Normal.
FIRST VICE-PRESIDENT.....H. L. DOAN, Jacksonville.
SECRETARY and TREASURER.....A. M. AUGUSTINE, Normal.

PROCEEDINGS

OF THE

TWENTY-FIFTH ANNUAL MEETING

OF THE

Horticultural Society of Central Illinois.

Held in the Chapel of the University of Illinois at

URBANA, ILL., DECEMBER 15 AND 16, 1897.

The meeting was called to order by the President, H. Augustine, at 2 o'clock p. m., in the chapel of the University of Illinois at Urbana, on December 15, 1897.

President Augustine said: Friends, the hour has arrived for us to commence our work, and our work is so closely allied to that of the Creator's that I will ask Dr. Ketcham to come to the platform and lead us with a word of prayer.

Dr. Ketcham offered prayer, at the conclusion of which President Augustine said:

Friends, we have our state divided into three districts. We hold an annual meeting in each one of the districts at a different place each year. Last year we met in Carthage, in the western part of the Central District. To-day we meet in Urbana. These meetings are largely for local interests, more so than they are for the society. Our state meetings, which are held annually, are largely in the interest of the society—more so than for local purposes. We are glad so many of

you are here. Sorry that the roads are so bad that more of the farmers cannot come in. I am free to say I think these meetings are largely in the interests of the farming communities. I wish they understood that more fully.

When the Secretary sent me a program I noticed the first thing on the program was an address by the President. I learned in the early sixties that the best thing to do was to obey orders, and in accordance with the custom and in order to set a good example, I will give you a brief paper:

THE PRESIDENT'S ADDRESS.

H. Augustine, Normal.

Fellow Members and Friends Interested in Horticulture in Central Illinois:

Another brief year has passed since we met in the beautiful city of Carthage, and we have great reason to be thankful; first, that death has not visited our ranks and we are permitted to meet and greet each other again and talk over the failures and successes in our chosen profession; and second, that we have been permitted to gather an abundant harvest as the result of our labors, especially in the small fruits, cherry, plum and apple, the latter having been very good over a very large part of our central district, and of rather good quality, and where properly harvested excellent prices have been obtained. The pear and peach crop was light, but on the whole we can say our labors have been crowned with success the past year. And then, too, our trees have made a good, healthy growth and gone into winter quarters in a well ripened condition, and from present appearances are making good promises for the coming year.

By this annual gathering we renew our fellowship, make new acquaintances, impart to each other fresh enthusiasm in the art of horticulture, a field in which there is so much to be learned, and for the beautifying of the heritage which God has given us. It is so valuable to get acquainted and interchange views on this subject; and the coming into personal contact with each other is calculated to take the conceit out of us and teaches us that we have not learned all there is to be known in this broad field of horticulture. Yes, it seems to me that the farthest advanced of us are only wading about in the shoals while a great ocean of truth unexplored lies

before us. Narrow views can be broadened when measured by other men's thoughts along the same line, and crude ideas become polished when rubbed against the ideas of our fellow-workers. Hence the importance of these meetings and the necessity of our working for a better attendance and a larger membership.

The San Jose scale has been discovered in a number of localities in our district by the vigilant, earnest work of Prof. Forbes and his associates, and we hope that with the hearty co-operation of the fruit growers in the district rendering all the assistance possible to Prof. Forbes, this pernicious pest will be kept under control. The committee appointed by the state society did all in their power to secure proper legislation by which to control not only the infested localities but prevent the further introduction, and in all probability would have succeeded better but for the opposition of some persons, and the publishing of articles in a few papers by persons who certainly could not have understood the motives that prompted the effort. These papers, sent to every member of both houses of our legislature, of course made it hard work for those working in your interest. Eternal vigilance alone is the price of full freedom from this curse, so let us keep our eyes open and assist our entomologist all that we can in discovering this pest and then exterminate it when found, even though at a sacrifice to us.

And now, fellow-workers, let me urge you in conclusion that in the discussion of these papers and subjects that will come before us during this meeting that we be practical and brief, giving just what we know and avoid long-spun theories that are of no practical value and thus mislead those who read our report. Our work is far-reaching and these reports are read by hundreds who never attend our society, so we want to be careful and not mislead. Let us get it into our hearts and minds more fully that our work is not for the professional fruit growers, but for the new beginners, the farmers and the man who is fitting up a home with attractions for himself and loved ones. I sometimes wish we could send a volume of our report into every home in our beautiful state, and thus spread horticultural knowledge and help those who have never studied this subject who squander money and get poor results. Suffer me to give an example: This last fall there were thousands and thousands of dollars lost in Central Illinois because the people did not know how to harvest and care for their apples. I was offered apples at 10 cents a bushel in the orchard that will now readily bring $1.00 a bushel, and before spring many of these people will be with-

out apples, or buy them at a high price, simply because they did not understand the handling of their fruit. Let us labor with the members of our legislature to be liberal in their appropriation so that we can send a volume of the report into every home where it will be read, and then let us each endeavor to make our book attractive and profitable to all who read it.

But I have already taken too much of your valuable time, in view of the completeness of our program and the character of the men who shall appear before us. With an exhortation that you all be free to take part by asking questions or offering suggestions, I close and we will take up the regular order of business.

THE PRESIDENT—We will now hear the Secretary's report.

Secretary H. L. Doan submitted his report, which is as follows:

SECRETARY'S REPORT.

The horticultural products of our part of the state have been of exceptional value this season, and for the first time during twenty years apples are being shipped by the carload. This has given increased interest in apple growing, and there are already numerous inquiries as to the varieties of apples to plant in this locality and the cultivation of orchards after planting. The horticultural reports have been eagerly sought for and read with interest. We are, as I said, shipping apples from this locality, and before two months have passed we will be shipping them in to supply the demand. It seems to me we ought to have some system of cool storage and save this expense. I had intended experimenting along this line but was prevented. Mr. Dunlap gave us a valuable paper on the subject of cool storage last year. The strawberry crop was the finest we have marketed for years, and fine, first-class fruit brought a good price in our market. The Parker Earle came to the front again this year. One-fourth of an acre yielding ninety cases at $2.00 and $2.40 per case. They brought the highest price of any berry on our market. The crop of cherries was light, especially the old trees. Raspberries and blackberries gave us a large crop and prices were lower than usual. Peaches were not of very good quality, mostly seedlings and small in size. Grapes bore abundantly and were in demand for making into wine.

TREASURER'S REPORT.

James T. Johnson, treasurer, made the following report:

J. J. JOHNSON, TREASURER, In account with the Horticultural Society of Central Illinois:

Jan. 23, 1897, balance on hand from former treasurer by draft		$135 84
Oct. 1897, draft from State Society		50 00
Total		$185 84
Paid out Jan 23, 1897, to Miss Clara B. Griffin, Carthage, Ill., for reporting	$ 20 00	
J. S. Malza, premium on apples	2 00	
Nov. 6, 1897, H. Augustine, expense bill	5 45	
Nov. 6, 1897, C. G. Winn	2 10	
Total		$ 30 55
Balance on hand		$155 29

QUESTION BOX.

PICKING AND KEEPING APPLES.

THE PRESIDENT—An important subject to fruit growers is that of how to keep apples after they are picked.

MR. C. G. WINN—I would recommend keeping them as cool as possible, at any point above freezing. A mistake is made in keeping apples in a cellar where it is too warm. They are left out until driven in by cold weather and then placed in a warm cellar. That is a mistake. By the careful use of a thermometer the temperature of your cellar can be maintained at a point sufficiently cool, and still not freeze them.

PROF. BURRILL—What will Mr. Winn do with his apples right after picking and before the weather gets cool.

MR. WINN—Put them somewhere so that a current of air can pass over them. A building opening to the north is best. Keep the sun out, and let a current of air pass through, and the apples will keep pretty well.

PROF. BURRILL—In barrels?

MR. WINN—Yes; but it is better to keep the head out of the barrel. I was in Mr. Evans' cool storage room in Missouri, where he had 10,000 barrels of apples stored. He has 650 wagon loads of saw dust in it. Has the natural soil on the sides. He keeps the barrels so arranged that a current

of air can pass through and around them. He has an opening at the north and a chimney at the south. I heard one of the largest fruit dealers in the South say he would give more for fruit kept in that place than any place he knew of. In the day time he keeps out the warm air, and at night he lets in the cool air. I am talking about cool storage along in the fall.

MR. J. S. HALL—When is the best time to gather apples?

THE PRESIDENT—I wish Mr. Riehl would answer that question.

MR. E. A. RIEHL—I think there are gentlemen here better qualified to answer that question than I am. But if the question is asked me I would say—when they are ripe. Do not wait until winter commences, but when the seeds are black and the apple is well colored, and the imperfect ones begin to fall, that is the time to pick apples. That depends also on varieties. Some varieties will ripen earlier than others. Take the Jonathan, Grimes Golden, and such as those, they should be picked earlier. No particular date can be given, either, because it depends on where you live. Where I live, in Southern Illinois, we have to pick sooner than you who live farther north. The true answer is to pick them when they are ripe—when the seeds are colored and the fruit is colored, and the wind falls begin to come off.

THE PRESIDENT—Would you advise gathering late keeping apples quite late?

MR. RIEHL—No; not any later than when they are ripe. When they have got their color and the seeds are matured is the time to pick them, and that will depend on variety and location.

MR. L. G. HUBBARD—Will apples keep better if picked a little green than when they are ripe.

MR. RIEHL—An apple that is picked green I consider picked before it is matured. An apple may be matured but not ripe. An apple that is not matured is green. If picked when green it will never be of good quality, will be apt to wilt. It should be matured and then it will color up all right and keep all right and develope into flavor.

THE PRESIDENT—I hope the audience will distinguish between a ripe apple and a mellow apple. There is a vast difference.

PROF. BURRILL—Mr. Chairman, I believe that we will have to acknowledge that here on our black, prairie soil in Central Illinois, we have not the very best place for apple orchards. There are places in Illinois that will beat us; there are places in the counties next west of us that will beat us, as we understand things now. I do not know but what after we get better acquainted with existing conditions we will succeed to such an extent that we will not be compelled to make this disagreeable acknowledgement.

This year we had a big apple crop wherever the trees were in condition for bearing. There were some cases where the trees bore heavily last year—not very many, but where the orchards were just about the right age they bore well last year and did not bear this year well; but in almost all the cases where the trees were at all in good condition we had a good crop of apples this year.

Now lots of those apples were wasted. They were not profitably marketed at all. Most of them have disappeared now, and the people where they grew are now paying a big price for apples.

I take it that one of the reasons is that we have not had apples enough along from year to year to get acquainted with the best methods of handling them. When we have had a little more experience with our conditions, and in the matter of utilizing the crops we will do better.

There is a cold storage plant in Champaign. Quite a number of barrels of apples were stored there this year, and undoubtedly are keeping in good shape, but they will keep but a very short length of time when they are brought out. They will have to be used very soon, if they are found to be in good condition when they are brought out to be placed on the table or used in the kitchen.

Now I believe we can, if we will adapt ourselves to conditions, raise apples in this section of the country with a fair degree of certainty. Surely enough to pay abundantly

well for planting apple orchards. I further believe that we can take care of the crop if we will when we get them. It seems to me that what we want to recognize first and foremost in this matter of keeping apples, is that the controling factor in the case is temperature. Not air, not ventilation, not moisture or dryness, but temperature. If we can fix it some way so as to keep the temperature low enough we can control the other conditions and succeed.

Take apples such as are shown on the tables here; some of them would have to be picked in the middle of September, when the weather is warm, sometimes hot. What shall we do with them? Not cart them to a cold storage place. We can't afford to do that.

It seems to me we should try to get something we could ourselves provide, if possible. I think it a great thing to utilize the night temperature as much as possible, and to keep out the heat of the day, whether we use a cellar or shed or a barn, or better than anything else, a place made especially for the purpose. It seems to me if we could make a house with walls and roof of non-conducting material and impervious to heat, and open it when the temperature is low and close it when the temperature is high, we will get much better results. It would have been worth thousands of dollars to this community this year if we could have had some such arrangement for keeping our apples until the market price came up to a renumerative figure.

The President—You made a remark in reference to dryness. Do you mean to say apples will keep just as well where there is moisture or dampness as where it is dry?

Prof. Burrill—I said if you could keep the temperature right you can keep apples in a moist place.

The President—But can you in a really damp place?

Prof. Burrill—I don't know how damp—but they will keep in water.

Mr. Riehl—Mr. President, I can indorse Dr. Burrill right there on the point to which you seem to object. I think in some sections it is conceded apples will keep better in a moist place than in a dry place. The main thing to be considered

is the temperature. The temperature should be low. The lower the better, as long as it don't freeze your fruit. If I could have my apples in a place where the temperature is 32 I would prefer it to any temperature higher than that. I think the reason apples do not keep after coming out of cold storage is that the temperature was not low enough while in the cold storage.

THE PRESIDENT—Do you consider that a damp cellar, where there is sometimes water, a good place to keep apples?

MR. RIEHL—I do if the temperature is low enough. My cellar where I am keeping apples is a cellar of that kind. It is not dry. In fact I keep plants in it, and have moss in it. The dampness does not hurt the apples.

MR. MENDENHALL, of Kinmundy—Mr. Chairman, I want to say this in regard to cold storage. The idea struck me the other day while in Chicago with reference to the sudden changes of temperature to which fruit is subjected, in taking our apples almost directly from the orchard or from an outside temperature of perhaps 50 to 70 degrees above zero and putting them in a place where the temperature is almost down to freezing point. The results may not be so bad from putting them in there under those conditions as in bringing them out in the spring sometimes as late as May or June, when the temperature is perhaps way up in the nineties.

The plan suggested is that in these cold storage plants they have cooling rooms where the temperature may be gradually reduced, ranging from a temperature of about freezing point to a temperature of perhaps 40, 50 or 60 degrees—along there somewhere—but gradually reducing the temperture, instead of bringing it out of an intensely cold place to what might be termed an intensely hot place. I think the cold storage plants will eventually have to be equipped in that way if we expect to keep our apples after taking them out of cold storage for any length of time. I believe it would make a difference.

MR. WALLACE, of Neoga—Apples will "sweat," and that is caused by changing them from a cool to a warmer place.

The thing which we should guard against is sweating. That can be avoided by giving the apples plenty of ventilation. I would, if the apples were kept in a room, open the doors at night and close them during the day. The time when they are picked makes quite a difference.

President Augustine—I have purposely allowed this discussion to go on because I think this is one of the very important questions that ought to be understood by the people who have just their family orchards. As I said in my report, I believe thousands of barrels of apples have been wasted this year in Central Illinois, just from the fact people do not understand how to take care of their fruit. Many of them are without fruit, or will be very soon. I think if I were to be governed by any rules one rule would be to keep the apples dry. Don't get them wet or let the rain into the barrels. Pick them dry and then get them into a cool place as quickly as you can. Keep them as cool as you can, and keep them out of the air. What I mean by that is, don't put them up on shelves as we used to, so as to be able to pick them over, keep them from a general circulation of the air. There is a difference between keeping an apple from rotting and keeping it in a good condition to eat. You put a genitan on a shelf and keep it there until April and it is not fit to eat, but put it in a place where the air does not circulate about it and you will have a nice, crisp, luscious apple.

The Chair appointed as a committee on Secretary and Treasurer's report D. J. Foster, Bloomington; C. G. Winn, Griggsville; Mrs. H. M. Dunlap, Savoy.

The President—I will ask Mr. Doan, of Jacksonville, to answer the seventh question on the progam, which is: "As to the best method of restoring fertility to worn out orchard land?"

Mr. H. L. Doan—Mr. Chairman: Some of my neighbors are pursuing one plan and some another. Some are sowing orchards down to clover and then turning it under. Others are fertilizing with bone dust. I have known of one orchard treated that way and I never saw a finer crop of apples than he had this year. He had as high as thirty bushels to

the tree and the apples hung on well all through the dry weather. I am trying fresh stable manure, putting it on at the rate of thirty-five to forty loads to the acre. Some of my neighbors have been using wood ashes, but we don't find that very beneficial in our soil. Some allow grass to grow in the orchard and some do not. Some cultivate. I am favorably impressed with the use of bone dust as a fertilizer.

THE CHAIRMAN—Many of our orchards are starved to death.

MR. RIEHL—I have been using cow peas for fertilizing my orchard for the last two years, and I know of nothing that will bring up the land so quickly and so cheaply as cow peas.

THE CHAIRMAN—Tell us the character of the soil?

MR. RIEHL—Our soil is a little different from that in this locality. It is not black. From the color of it you probably would say it was not good, but we have the best soil in the country. But it can be run down by continuous cropping so that it will not produce well. If you put a crop of clover on it and then turn it under the land is just as good as ever. I find the cow pea will do it just as well and better than clover and in less time. It will do the whole work in one year instead of requiring two years. So from the experience I have had, and from what I have seen and read and heard there is no crop that I think as much of as cow peas or soja beans, which are very much the same for fertilizing purposes. I sow them broad cast rather late. They are a southern plant and will not thrive early in the season. You should wait until the end of May or the beginning of June, then plow the ground and sow them and then let the whole thing go.

MR. READ, of Wisconsin—I am very much interested in the cow pea question. I would like to ask the gentleman what the variety is that he has had such success with. They are just beginning to get interested up in our country in the cow pea question.

Mr. Riehl—If you buy mixed seed you will get the best results. I get my seed in St. Louis.

Mr. Stanton, of Richview, Ill.—This is something that interests us down in Southern Illinois very much. Our soil is very poor and needs fertilization. It is important to know the condition of the soil in order to know the kind of fertilization it needs. If we want nitrogen we use cow peas, and that variety that will grow the largest plant and the largest roots. We have been led to believe that the clay pea is the best for a fertilizer. It does not grow a very large seed, but grows a good strong root and top, and produces very much the same effect on the soil that the clover roots do. Enlargement of the roots has the effect of drawing the nitrogen from the atmosphere. I have been getting my seed in Tennessee.

Prof. Eugene Davenport, University of Illinois—Mr. Chairman, it would seem from my correspondence that all Illinois is excited over the cow pea and sugar beet question, and we have prepared a little circular on the subject of cow peas, which is here for distribution. We are glad to receive communications and answer all questions so far as we are able. We invite correspondence:

The following is a copy of the circular to which Prof. Davenport referred:

THE COW PEA AND THE SOJA BEAN.

E. Davenport, Urbana.

The cow pea, which is essentially a bean, and the soja bean, which is a pea, are so similar in nature and use as to be closely associated in the public mind and to make it expedient to treat them in close connection. Both are natives of Southeastern Asia, where the seed is used principally as human food and the vines as stock food. In this country they are used almost exclusively for stock. Both are leguminous and, like all their kind, bear tubercles on the roots which gather nitrogen from the air. Both are valuable, therefore, in restoring fertility, and stand in the same relation to agriculture as does the clover plant. Both are capable of yielding about thirty-five bushels of seed per acre, though the

yield generally falls to less than half that amount. The cow pea is more spreading, makes more hay and of better quality, because the soja bean, though very upright, has a woody stem, and drops its leaves badly. Neither should be cultivated when wet. The cow pea succeeds best in the south where it has been grown freely since some time in the last century. As it is brought into the northern states its seeding habit lessens. The soja bean has been but recently introduced from Japan, succeeds best in the north and fails utterly in the far south. Both may be sown either broadcast or in drills, but both yield more seed from drills. Both enjoy good land, but will grow upon land "too poor to raise anything else." The pods of the cow pea are eight to fourteen inches in length and hold eight to sixteen seeds in each. (If they are closely crowded together the variety is known as a "crowder.") The pods of the soja bean are more numerous, but short and hairy and contain but two or three seeds in each. The cow pea has more than sixty varieties ranging from two to five months for maturity, and from upright to trailing in habit; the soja bean has few varieties and they are all upright.

TABLE 1.—*Composition of Cow Pea and Soja Bean in Comparison with that of Indian Corn.*

	Water.	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Cow pea, green	83.6	1.7	2.4	4.8	7.1	0.4
Soja bean, green	74.8	2.4	3.0	7.3	11.5	1.0
Red clover, green	70.8	2.1	4.4	8.1	13.5	1.1
Indian corn, green	73.4	1.5	2.0	6.7	15.5	0.9
Cow pea, hay	10.7	7.5	16.6	20.1	42.2	2.9
Soja bean, hay	6.7	4.8	17.5	32.3	31.8	6.9
Red clover, hay	15.3	6.2	12.3	24.8	38.1	3.3
Cow pea, seeds	14.8	3.2	20.8	4.1	55.7	1.4
Soja bean, seeds	10.8	4.7	34.0	4.8	28.8	16.9
Indian corn, seeds	10.6	1.5	10.3	2.2	70.4	5.0

TABLE 2.—*Composition of Different Parts of the Cow Pea.*

	Water.	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Leaves	11.05	11.24	18.81	19.74	32.48	6.71
Leaf stems	9.64	12.82	6.12	23.47	46.01	2.16
Stems	10.09	6.20	5.87	38.84	38.20	0.89
Peas	12.14	3.32	24.84	4.83	53.76	1.21
Hulls	10.46	2.81	6.36	41.43	38.48	0.45
Roots	1.32 per cent. nt nitrogen	equal to	8.25	of protein.		

TABLE 3.—*Digestibility of the Various Constituents of Cow Pea and of the Soja Bean in Comparison with those of Indian Corn.*

	Dry matter	Ash.	Protein.	Fibre.	Nitrogen free ext.	Fat.
Cow pea hay	59.2	45.1	64.5	42.9	70.7	50.0
Soja bean hay	....	....	76.8	54.9	52.0	71.9
Indian corn fodder	62.9	27.0	42.4	67.4	65.7	74.5
Cow pea ensilage	59.6	30.3	57.5	52.0	72.5	62.6
Soja bean ensilage	49.8	28.0	55.3	42.9	61.2	48.9
Indian corn ensilage	63.6	31.5	48.6	62.6	67.8	81.9

Space forbids discussion of these tables except to note the high content of ash in cow peas; the remarkable content of nitrogen of both cow peas and soja beans especially in seeds, leaf and the smaller stems as well as its high digestibility, (see columns headed protein); the high fibre content of the stems, particularly of soja bean and its low digestibility; the excessive proportion of fat in soja beans, especially in the seed, and its notably low percentage in the cow pea. The reader that is interested will find in the table data for valuable comparisons.

Uses.—The cow pea has been much longer and more extensively grown than the soja bean and its culture and uses are better understood.

As Green Forage.—Both are greedily eaten in the fresh state by cattle and hogs, though the cow pea seems to be preferred, and a favorite practice is to "hog down," that is, turn swine into the field as soon as the peas begin to ripen. They eat greedily of both peas and vines and thrive wondrously.

As Hay.—In the South the cow pea is cured as hay after cutting with an ordinary mowing machine and is consumed in large quantities by cattle, mules, and horses. It is somewhat difficult to cure, particularly in the north, and is especially valuable for its leaf and slender stems. The hay from soja beans is inferior because of its heavy, woody stem and because the leaves readily fall off (see table 2). In Massachusetts, however, soja bean hay fed with half its weight of barley straw proved a full equivolent for common hay.

As Meal.—The seeds of both are relished by cattle and hogs and experiments show the meal to be superior to cotton seed meal, both for quantity of milk and for quantity of butter. It is somewhat expensive to harvest the seed as the pods are generally picked by hand, and by that time the rest of the plant is of little value, particularly if it be soja bean. Without a doubt the best use to be made of these crops is to "hog down" or feed green to cattle, to make into ensilage for cattle, or into hay for horses and cattle, according to the circumstances of the farm.

For Fertilizer.—The value of these two crops as a fertilizer is largely due to their high per cent. of nitrogen and, further, upon the fact that though they prefer good land they will grow on either sand or clay that is "too poor to raise anything else."

As the roots are small and nearly five-sixths of the plant is above ground the stubble alone does not enrich the ground

as much as do the corresponding parts of alfalfa and other clover. Sown for fertilizer, the crop should be plowed under, or better yet, hogged down or pastured off before plowing. They are different to fertilizers, except the superphosphates.

Yield.—Rhode Island reports yields of two or three tons of dry matter of cow peas and slightly less of soja beans. Delaware reports but a little over one ton per acre of cow peas. Louisiana over one and one-half tons and South Carolina over three and one-half tons of dry matter; to which ten per cent. should be added to express it in terms of hay. Ohio reports but one and one-half tons of green forage, but the land was poor. The yield of seeds varies greatly in different localities, with different varieties and with time of planting. In general, cow peas and soja beans are capable of about equal yield in seeds, the former tending to excel in the south and the latter in the north. Both yield more in drills than when sown broadcast; late planting tends to increase seed production and early planting to excessive development of stem and leaf. Of the many varieties of cow peas, the small upright growers are most prolific in seed and the so-called trailers, of longer growth, yield most of forage. Yields of seed reported vary from ten to twelve bushels to as high as thirty-seven per acre, though twenty-five bushels is a good yield of cow peas and twenty of soja beans.

Varieties.—The two common varieties of soja beans are the Black Medium and the Early White, or Improved White. Of these the first seems to give the ranker growth of vines and the latter the heavier yield of seed.

The sixty or more varieties of cow peas differ greatly in character of growth, in amount of vine, in yield of seed, and in the time required from seeding to maturity. Some of the smaller varieties called "bunch" varieties are entirely upright, like soja beans, others called "trailers" send out long trailing vines fifteen or twenty feet long, and still others called "runners" send out upright stalks which afterward from extreme development resume a horizontal position. The real trailers produce a heavy growth of vine, but the crop is difficult to secure with a mower which rides over many of the lower vines leaving them attached both to the ground and to the tangled mass of vines above them. Because of this, the so-called runners are preferred as being easier to cut clean from the ground. A few varieties will live in the ground over winter in the southern states and come up the succeeding spring. The following supposed facts will be of value to the prospective grower: (t) means trailing; (r) running; (e) erect.

Very Early—Sixty to seventy days; New Era (r), Chocolate (r), Congo (r), Vacuum (r), White Giant (r).

Early—Whippoorwill (e), Red Crowder (r), Granite (r).

Medium—Coffee (e), Large Lady (r), Pony (r).

Late—Black Eye (r), Everlasting (r), White Crowder (r).

Very late—Unknown (or Wonderful) (e), Black (r), Blue Hull (r), Purple Hull Crowder (r), Clay (e), Conch (t), Gourd (r), Calico (r), Quadroon (e), Redding (r), Red Nipper (r), Rice (r), Speckled Crowder (r).

North Carolina prefers Unknown and Black for yield of either forage or seed. Clay for poor land and Rid Nipper for dry, sandy land. Nearly all except the northern states place Unknown first and Black second for general use, that is, for both seed and vine. The Clay recommended for poor soils has much vine, but is a poor bearer. The Blue is small, with few vines, but a good bearer. Whippoorwill is an early variety of great excellence, but is a "bunch" pea with few vines.

Culture.—Either of these crops will grow on almost any land that is not too wet, and may be sown broadcast at the rate of one-half to two bushels per acre, using least seed with the trailing or running varieties. They may also be planted in drills of convenient distance for cultivating, planting the seeds five or six inches apart in the row, in which case a bushel of soja beans will plant about four acres, and of cow pea four to six, according to the variety. The yield of seed will be best from drills but the culture is cheaper when sown broadcast on ground well prepared as for corn, in which case the crop now takes possession of the ground to the exclusion of weeds. In the south cow peas are frequently sown in corn at the last cultivating.

In general, the best time to plant is immediately after corn, though much depends on the variety, and upon the fact that late planting favors seed formation, particularly with cow peas. In all cases avoid cultivation when the vines are wet.

Source of Seed.—Seed can be purchased from any reliable seedsman, and at prices ranging from 75 cents up, according to the locality and other circumstances. Southern seedsmen seem to pay most attention to varieties.

The Chairman—I would like Professor Burrill to answer question number two, on the program, viz: Should varieties of apple trees be planted separately, or mixed, to get the results?

Prof. Burrill—I don't know (Laughter and applause). A great deal has been said lately about planting them in mixed order. It has been well proven that some varieties of pears do a great deal better when thus planted. I don't know of any real proof as to the apple orchard. We may suspect a good many things; sometimes a tree in an orchard will bear quite full on the eastern side and the western side will be barren. The explanation has been, that at the time of the blossoming the pollen blew from the west side, from that tree; that it must have fertilized the blossoms on the east side. There are other explanations, a good many of them, perhaps, just as good as that. It is pretty well settled that fertilization makes no difference in the apple itself; I mean the quality. It might have a great deal to do with the growth of the apples, after they have once set. How frequent it is that a tree blossoms well, apparently, and sets fruit abundantly, but in a week or so three-fourths of it falls off. Now this would take place if it was not fertilized; the same kind of dropping would occur. There is no doubt about that; if pollen fertilization was not complete, was not full enough. Whether that dropping off, occurring so conspicuously, is really due to lack of fertilization any considerable number of times, I am sure I cannot tell. I believe, Mr. Chairman, that this is an important question, and I should like to contribute something of value on the subject, but I don't believe I can.

The Chairman—Dr. Burrill, in order that we may get at your convictions in the matter, I will ask you a question. If you were planting an orchard of fifty acres, and you wanted to plant two varieties, say for instance, the Ben Davis and the Missouri Pippin, and you had two pieces of ground of twenty-five acres each, a half a mile apart, would you plant

twenty-five acres of the Ben Davis on one piece and twenty-five acres of Missouri Pippins in the other, or would you plant a portion of each variety in each piece?

PROF. BURRILL—I would like to be on the safest side possibly, and I don't now see any detriment in mixing them to a considerable extent. Some annoyance might ensue in gathering the apples, if the trees were planted in alternate rows, and yet if we get apples in the one case and none in the other, we could afford to put up with the annoyance, whatever it might be. It might do well to plant in alternate rows; we might feel that this fertilizing effect would take place if we would mix them. The apple blossom is fertilized both by pollen carried in the air and by insects. Largely, when the weather is fine and other things favorable, by insects. The insects may carry pollen sometimes further than we think, and yet if I were at all expecting to depend upon fertilization from tree to tree I would rather have them in adjoining rows than in plantations a half a mile apart.

MR. JOHNSON—I don't believe there is anything gained by mixing varieties in an orchard. My observation and experience is that very many of our apples, if not all of them, are sufficiently self-fertilizing. If that is so, I don't see what particular good it would do to plant in alternate rows.

MR. WINN—I used to think they fertilized better and colored up better by planting in alternate rows, but I am like Professor Burrill, I don't know.

MR. RIEHL—I, too, am like Professor Burrill in that respect, I don't know; but we have a right to reason from some things that we do know. I do not believe that the apple needs cross fertilization. I do believe that the pear does need it.

THE CHAIRMAN—And the plum?

MR. RIEHL—No, I won't go any further. The pear is more nearly a kin to the apple. It is a fact that all those varieties of pears that have been sent out as seedless, when they are grown in orchards where there are other varieties of pears, every one of them will have seeds. I take it from that, it is better to have them ploughed so they can cross fertilize.

If I were to plant a few varieties of apples in an orchard, I would try to get each variety in a block. I think there is nothing in this theory of cross fertilization, so far as the apple is concerned.

THE FIRST FIVE YEARS OF AN APPLE ORCHARD.

C. G. Winn, Griggsville.

In setting out an orchard five things are very essential:
First—A proper location.
Second—Condition of the soil.
Third—Varieties to set out.
Fourth—Where to buy.
Fifth—How to set out and the cultivation afterward.

So in order to properly get hold of the subject I will consider the subject in the above order:

First—Location, this to me seems about as important as any one thing in our county, the best location would be on a clayey timber upland, the higher the better, with air drainage so as to carry off the cold damp atmosphere; think if a belt of timber were on the west it would be an advantage, as from that locality our high winds generally come. I have in mind an orchard that is close to the Illinois river bottom on a high elevation that has timber on the west, and that has had no care, was never sprayed, has been in grass a good many years, where the fruit was far superior to any fruit I know of grown on black flat prairie soil, even if they were sprayed. I can see no reason for this than the location and soil.

Second—Condition of soil, this I think should be in prime condition for growing a corn crop, for three or four years as it is generally agreed that for at least three years here in Central Illinois that no crop can be grown with as much profit and benefit to the trees as a corn crop, to turn over a clover crop or break up an old pasture is best.

Third—Varieties to set out we have been running largely, and I think to much too Ben Davis. The market wants either a red, green or yellow apple and wants a certain amount of each. As for myself I would plant Ben Davis, Gano, Jonathan, Grimes Golden, Huntsman's Favorite and Willow Twig, if I had a suitable location for the latter. My experience is that the latter is no good unless on a very high

ridge. I would plant Gano for the reason that it colors up sooner than the Ben Davis. I would plant the Jonathan and Grimes Golden for they are both wanted as dessert apples and the Huntsman, for they are a large, showy apple of fine flavor and a good and early bearer. I have noticed that when they fall to the ground they bruise as little as any apple I know of, and stick well to the tree. To-day they sell in St. Louis as well as the Jonathan, and I am told they do in Chicago where they are known. Of course I am speaking now of commercial orcharding.

WHERE TO BUY.

I used to think I knew of a straight, reliable firm, so sent them my second order, but to my sorrow, I find I have nothing straight and true in one setting but Ben Davis, so I say beware where you buy. I would rather trust a man who cuts his own scions and personally oversees his grafting than one who runs a large business and trusts all to hired help, and I think we as horticulturists ought to expose any one we have found sending out trees not true to name.

Fifth—How to set out and how to cultivate. After the trees have been selected and the ground prepared, the trees should each be inspected so as to see that the roots are in proper shape, all bruised and broken roots, and all with knots should be cut off with a sharp knife, the top cut back to correspond with the roots, the hole dug large enough so the tree with its roots can be set in as near a natural position as possible, the earth ought to be thoroughly sifted and packed around the roots so as to exclude all air, set with a main limb pointing to the west and the tree slightly inclining to the 2 o'clock sun.

I think that if corn is now planted and the trees cultivated the same as the corn with frequent hoeings for the first year the trees will now thrive. On the university grounds in Champaign the writer this season inspected while with the executive committee of our state society a clump of apple trees that I think have been set out five years, they have been divided into five tracts, and each tract treated in a different manner, and I think an object lesson that each orchardist in the state ought to study, one clump has been in blue grass all the time, another has been sown to oats each season, another has been in clover all the time, another has had a corn crop grown between the rows each season, and the last has had nothing but clean cultivation. I think I have named them in the order in which they have

thrived best and are set out. I should think those grown in blue grass would be no larger in five years from now than those that have had nothing but clean cultivation all the time; those grown on oat land looked nearly as bad as the blue grass lot, while the clover plot looked better than either the blue grass or oat plat, still it was not nearly as thrifty as the plat where the corn has been grown. I think that there was perhaps less real difference between where the corn has been grown and where clean cultivation has been carried on than any of the plats.

I have in my mind an orchard in our county that was set out on rather poor soil where corn has been grown for three years and the balance of the time has been in clover, the clover instead of being removed has been mowed and placed under the trees as a mulch early in the season and left there till freezing weather, when it was removed from the ground; this, I think, has made one of the most remarkable growths of any orchard I know of in the last five years, being at least two years in advance of some other orchards that are growing on similar land. Where corn has been grown all of the time, and I think had half of the plat on the university land that was in clover been mowed and treated in a similar manner that it would have shown a growth as great as where only clean cultivation has been carried on. Our largest orchardist tells me he will grow corn for three years and on the clover mulch, as he thinks that is the greatest thing he knows.

DISCUSSION.

THE PRESIDENT—Two questions have been submitted with reference to this paper. One is "What is the proper distance to plant trees apart?" and the other is "Which is best, spring or fall planting?"

MR. WINN—I have planted heretofore two rods apart. I think hereafter I will plant them a little closer.

MR. SIMPSON, of Indiana—My opinion is fall planting is the best. The tree gets settled and starts to growing better when spring comes.

MR. JOHNSON—Take one year with another I think it a great risk to plant trees in the fall. We should be prompt in planting our trees in the spring. When the ground and season are ready you should plant. If you wait ten days you may be too late.

MR. DOAN—I would like to ask Mr. Winn whether he thinks the life of an orchard is as long when the trees are planted twenty-five feet apart as it is when planted thirty-two feet apart?

MR. WINN—I think it is longer when they are planted thirty-two feet apart.

MR. SIMPSON—As to planting in the fall, to get the best results, I don't think you ought to plant until the leaves have fallen. It is injurious to strip them. If the tree has ripened up so the leaves will fall then I say it is a benefit.

Another thing I would say. In planting trees we find it a great benefit just before planting them to make a hole about a foot and a half deep and put in water and fertilizing dirt, and stir it up and make a thick paste. Just before we plant our tree stick the roots in that hole and take it out and then plant it immediately. In that way it makes a plaster, or coating, around the roots. Then throw in the dirt and "tamp" it down, and I believe it is better than to put water on it in any other way.

THE CHAIRMAN—Would you advise that method for spring planting, or is there danger of a drouth coming and shutting up the pores of the roots that have been treated in that way?

MR. SIMPSON—I would do it at any planting, because that puts the mud right around every root.

THE CHAIRMAN—My plan is to get your tree late in the fall, bury it about two feet in the ground, root and top and all, leave it there during the winter and at the very first thaw in the spring, even if it is in February, plant your trees, and it will grow right ahead. If planted late in the season those little leaves when they come out are liable to be caught by the hot sun we sometimes have in April. In Central Illinois I would say avoid fall planting; but there is no objection to getting your trees ready for spring planting in the manner I have stated.

Adjourned until 7:30 p. m.

WEDNESDAY EVENING SESSION.

The society met at 7:30 p. m., in the physics lecture room of the University of Illinois, President Augustine in the chair.

The committee on the revision of the fruit list submitted the following report, which was adopted:

REVISED FRUIT LIST FOR CENTRAL ILLINOIS.

FOR A FAMILY ORCHARD.

Summer—Red Astrachan, Duchess, Keswickcodlin, Benoni, Sweet June, Sops of Wine.

Fall—Maiden's Blush, Wealthy, Fameuse or Snow, Ramsdell Sweet, Rambo.

Early Winter—Jonathan, Grimes Golden, Roman Stem.

Late Winter—Minkler, Willow, Ben Davis, Rawles Janet, Pewaukee.

FOR A COMMERCIAL ORCHARD OF 1,000 TREES.

Summer—Twenty-five Red Astrachan, 75 Duchess, 25 Keswick Codlin.

Fall—Twenty Maiden's Blush, 10 Wealthy, 20 Snow, 10 Ramsdell Sweet.

Early Winter—One hundred Grimes Golden, 100 Jonathan.

Late Winter—Three hundred and fifty Ben Davis, 115 Willow, 150 Minkler.

CRAB APPLES.

Hyslop, Martha, Whitney.

PEARS.

Standard—Tyson, Keiffer, Howell, Seckel, Flemish Beauty.

Dwarf—Duchess De Angouleme, Louis Bonne de Jersey.

PEACHES.

Elberta, Thurber, Early Crawford, Champion.

PLUMS.

Pottowatamie, Wild Goose, De Soto, Wolf, Blue Damson.

CHERRIES.

Early Richmond, Montmorency, English Morello.

BLACKBERRIES.

Snyder, Ancient Briton.

RASPBERRIES.

Red—Cuthbert, Turner, Loudon. *Black*—Eureka, Kansas, Nemeha, Gregg.

STRAWBERRIES.

Crescent, Warfield, Lovett's Early, Haverland, Bubach. *Late*—Gandy, Parker Earle.

GRAPES.

Moore's Early, Concord, Worden, Niagara, Pocklington, Brighton.

REPORT OF EXPERIMENT STATIONS FOR CENTRAL ILLINOIS.

H. AUGUSTINE, Normal.

There are only three stations in our (central) district, namely, the H. M. Dunlap Station, No. 4, at Savoy; the Hammond Station, No. 5, and the H. L. Doan, No. 14, Jacksonville. The latter is only one year old, the first planting was done last spring and so far only one year's growth, and only small fruits and grapes.

Station No. 5, at Warsaw, has had no planting since the death of Mr. Hammond, over three years ago. This station is now well advanced in growth, and there are 64 varieties of apple and 103 trees. In variety some of the old kinds are found, but mostly new and untried sorts, including some of the southern and more of the Russian varieties. Some of these have borne specimens this season, but not suf-

ficient to make an elaborate report. I shall attach Mr. Hammond's report giving his observations of the several varieties of fruit that bore fruit in the station this year.

Of cherries there is quite an assortment and these all of bearing size. 29 trees and 14 varieties. From these as well the apple we ought to be able to get some good results in the near future.

Of peaches there are 54 trees and 24 varieties. These did not fruit this year.

Of pears there are 35 trees and 17 varieties, none bearing except a few Keiffer.

In plum there are 60 trees and 34 varieties.

Of quince, 12 trees and 6 varieties.

Grapes, 36 vines and 16 varieties.

The total number of trees and vines in Station No. 5 is 339 and 178 varieties.

The following is Mr. Hammond's report on what his observations were during the past season:

APPLES.

Jeffries—Good, healthy, thrifty looking trees with a good deal of fruit for first crop; apple rather flatish, dark-red and dotted.

Troy—Thrifty tree, but only a few apples.

Horne—Strong, thrifty but rough tree; some fruit of which Mr. Augustine has a few specimens; late winter.

Peter—Healthy, good tree; a few apples of medium size.

Tusoff—Bore two or three large, bright red apples.

Salome—Tree healty, vigorous grower; bore a few medium smooth apples.

Mammoth Black Twig—Good, thrifty tree; the fruit resembles Brandywine in shape and size, but is a dark-red.

PEARS.

Keiffer—Bore about a peck of first-class fruit.

PEACHES.

Bore nothing this year, but were full last year.

PLUMS.

Newman—Ripen first; good crop; medium size.

Prairie Flower—Loaded; fair size; good quality.

Spalding—Tree wonderful grower; the fruit is of greenish cast, large and splendid quality, but rot badly on tree.

De Soto—Tree strong, healthy but slow grower; nice, large, bright red fruit; quality good.

Poole's Bride—Vigorous tree of good size; has given the best crop; loaded, and best fruit.

Moore's Arctic and Lombard—Were full and promised to be choice fruit, but it all dropped off before ripening.

Saratoga and Abundance—Had a medium crop of what would have been good fruit had it hung on till ripe.

CHERRIES.

Early Richmond—Heavily loaded with good fruit.
Riga Oval—Small crop of fair size; quality medium.
Ostheim—Fair crop; quality poor.
Carnation—Some fruit, but not very good.
Bessarabia—Fair crop; quality of fruit fair.

QUINCES.

Champion—Tree seems strong and vigorous; this year bore ten fine, large, smooth quinces.

Station No. 4, H. M. Dunlap, Savoy, will be reported by Mr. Dunlap himself and become a part of this report.

Our Central District extends over two-fifth or one-half of the state of Illinois; and yet we have really only one full station where a variety of fruits are being tested, namely, No. 4, at Savoy. And in the judgment of your committee the station at Jacksonville ought to be made, instead of a small fruit station, a station to test all the different varieties, including tree fruit, and that we establish one or more stations at as early a date as possible, but to exercise care to place it in proper hands that the best results may be secured. No doubt but horticulture in our state will in the near future be wonderfully helped by our stations that are just now beginning to show results, especially from the tree fruits as many of them are just coming into bearing and will be more valuable as the trees grow older.

Much care must be taken, however, in our reports to not mislead the planter by jumping at conclusions from the first few crops. Believing that our executive committee is abundantly capable of shaping this work for the best interest of the work in Illinois, I submit the report.

By request of the president, Mr. Riehl read report of Experiment Station No. 4, Savoy, Ill.; H. M. Dunlap, superintendent, not being present.

[The report is published, following the proceedings of the State Society.—Sec'y.]

A. D. Shamel gave a short talk, with illustrations on blackboard, showing the great value of sub-soiling fruit plantations.

Professor Burrill submitted a paper on The Tulip Tree, accompanied by illustrations with lantern.

The paper was as follows:

THE TULIP TREE.

T. J. Burrill, Professor of Horticulture, University of Illinois.

Last year, I had the pleasure of addressing this society upon trees in general, as used along highways and upon home grounds. I am now, to invite your attention to a much closer study of a single, although notable, species native to our American forests, well known to most of us for its peculiar and striking characteristics. This time we shall undertake a botanical, rather than a horticultural sketch. We shall try to learn something of the tree itself, of its structural and other peculiarities, of its relationship with other plants, and of its present and former distribution in the earth. Then we may, through all these, seek to solve some of the problems concerning its origin and wonderful ancestral line by which it has reached our times and territory. In doing this, I shall follow the example first set by Dr. Asa Gray, in his paper upon Sequoia, the great red woods of the Pacific Coast.

Speaking of the tulip tree, as grown under favorable conditions and to maturity, it is not unfair to assign it to a very prominent place among the glorious sisterhood constituting our American forests which, with one exception, is the finest and fullest and richest forest flora occupying a like area in the world. We have beautiful lindens and maples, magnificent elms and walnuts, graceful birches, meritorious catalpas, lordly oaks and smooth sycamores, together with scores of others equally interesting and worthy of mention; but among all of our deciduous leaved trees there is none to vie with the subject of our discourse in the combined charms of individual distinctness, of refined elegance, and of imperial mien.

Downing says: "Whoever has seen the tulip tree in a situation where the soil was favorable to its growth can never forget it. With a clean trunk, straight as a column for forty or fifty feet, surrounded by a fine, ample summit of rich green foliage, it is in our estimation decidedly the most stately tree in North America. When standing alone and encouraged in its lateral growth, it will indeed often produce a lower head, and its tendency is to rise, and it only exhibits itself in all its stateliness and a majesty when, supported on such a noble columner trunk, it towers far above the heads of its neighbors of the park or forest. Even when at its loftiest elevations its large specious blossoms, which from their form one of our poets has likened to the chalice:

Through the verdant maze
The Tulip tree
Its golden chalice triumphantly displays.
—PICKERING.

Jut from the tufted canopy in the month of June and glow in richness and beauty. For avenues, it makes a most rich overarching canopy of verdure, supported on trunks almost architectural in their symmetry."

Baron Von Mueller, a German investigator and author, who has traversed the globe, having observant eyes and a ready pen, says the tree is one of the largest in the United States, and is one of the grandest vegetable products of the temperate zone.

Professor Lescuereaux, who studied the fossil species as well as the living one, says that the tulip tree as a natural object is as worthy of attention as is Niagara Falls or the valley of the Yosemite.

The tree reaches a height in favorable situations of 150 feet, and specimens have been measured which towered skyward thirty or forty feet above this. This height is surpassed in America only by the great California red woods (Sequoia), the tallest of which, called the Keystone State, in the Calavaras' grove, is 325 feet high. In diameter of trunk, specimens surpass those of any other deciduous leaved tree except the cypress and the sycamore, which are in no other respect to be compared with our species. Robert Ridgway, of the Smithsonian Institution, measured a tulip tree, then recently cut in Wabash County, Illinois, and found the circumference at the base to be thirty-five feet; the distance to the first limbs, 100 feet; the diameter of the great branches, from one to one and a half feet, and the entire length 190 feet. In the Wabash valley in Illinois and Indiana a few years ago, it was

not uncommon to find trees seven to eight feet in diameter and with straight, clear trunks fifty to seventy feet. Mr. Ridgway found the woodsmen in Wabash County, Illinois, cutting a tree into ten twelve-foot logs. Another specimen, in the same locality, was a little over seven feet in diameter at the base, and six feet seventy-four feet above, as straight and clean throughout as an architectural column. In this latter respect the tulip tree is only equaled in our forests by the Sweet Gum or Liquidamber, which in reality is the only competitor it has for first honors in the beauty and symmetry of its trunk, of branches, of foliage, and for forestry queenship in general.

The tulip tree occurs, or did occur, in the native woods of the United States, from the banks of the Connecticut river, and exceptionally further east, westward to the Mississippi, and into Missouri and Arkansas, and from near the Straits of Mackinaw to Louisiana; but never so far north except in specially favorable loccalities and never in the sandy soil of the maratime regions. Its best development was reached in the forests of the southern half of Indiana and Illinois, and in Kentucky and adjoining portions of Missouri. It delights in deep, rich and moist, but not wet, soil, and in situations free from high winds. The largest trees were found upon the interior hills rather than upon the bottom lands of the rivers, where many other trees reach their greatest development.

Despite the trim appearance, including the dress-coat cut of the leaves, the tree is not a society lover, especially among its own kind. It does not form groves as do many other species, either habitually or occasionally. On the other hand, the tree is no pioneer, never being in the van in the encroachments upon the prairies or other openings. It is propagated only from seed, and these have no means of natural distribution except by the wind for short distances, neither are they abundantly produced.

The Indians made canoes, or dug-outs, from its trunks, often large enough for a score of men, and for this purpose the tree was especially well adapted. White men in the early days were not slow to learn of the many uses for which the wood is pre-eminently valuable. These monarchs of the forests, crowned by divine right, imperial in stature and in habiliments, were brought down to dust by the settler's axe, made into vulgar rails for Virginia worm fences, or into puncheons for the floors and roofs of the primitive cabins. After cabinet-makers and manufacturers commenced their operations the wood was put to a great variety of uses. The

fine grain, the freedom from knots and slivers, the characteristic soundness from the very base to the top of the trunks, the large size, the ease of working, and the durability when kept dry or freely exposed to the air, causes its selection in great quantities for buildings for both outside and inside use, for furniture, for vehicles, for a variety of implements and apparatus, for lathe work, for all purposes where lightness with strength, flexibility with freedom from splitting, smoothness of surface with the capacity to hold finishing varnishes and paints, and such requisites as these.

Lumbermen distinguish two kinds of the wood commonly known to them as white and yellow poplar, the latter being much more highly esteeemed. But the difference is mainly due to the soils and conditions of growth of the tree, not to varietal differentiation. Sometimes a third kind, called blue poplar, from the tint of the wood, is also known to those dealing in lumber or working it, but this is not so common and comes from the same trees, botanically, which furnish the other sorts. In the lumber markets the products of this tree are called indifferently yellow poplar or white wood, though it has no botanical right to the former name.

The live parts of the tree have an agreeable odor, though the taste is acrid and bitter. The bark is nearly as rich in tannin as the best tan-bark oaks (about 8 per cent), and its bitter principle has been considered nearly as effective in medicine as cinchona. In the days of fever and ague in the then western country, the bark of the roots, often steeped with dog-wood or cherry, was used by many people as the best accessible antidote. In this white settlers followed again the example set by the Indians, for they had learned its value, and their medicine men compounded its bark in their famous potions.

"If fever's fervid rage
Glowed in the boiling veins * * *
* * * Anxiously they sought
The Liriodendron, with its varied bloom,
Orange and green and gold * * *
* * * To supply
The place of famed cinchona, whose rough brow
Now ruddy, and anon with paleness mark'd,
Drinks in its native bed, the genial gales
Of mountainous Peru."

The tree is itself singularly free from diseases and the attack from insects, the latter no doubt due in good part to

the bitter acridity of the leaves and bark. The two or three insects and the one or two fungi which do infest the living leaves do not usually cause serious damage. But it does not thrive in impure atmosphere, laden with the products of combustion from disreputable chimneys.

The tree was early introduced in England and European continental countries in ranges of climates corresponding to those of its native habitant, and has not only grown well, but is esteemed one of the most prominent arboreal contributions of the new to the old world. Accounts of it in England date back to 1663, and mention is made of it in the catalogue of the Leyden botanical gardens issued in 1731. In France, southern Germany and Italy it is not uncommon in the parks and ornamental grounds, though I am not aware of its use in plantations for economical purposes.

Let us now attend, aided by the lantern, to the distinctive botanical characteristics of the species and to those of some of its nearest allies. From these we shall learn that the tree has no very close relatives, either on the American Continent or anywhere else, though it does belong without question to the natural order Magnoliaceæ, which embrace three different tribes and eight other genera besides Liriodendron. This last has in our time only the one species, but several others have existed and have left traces of themselves as fossils. Our genus is associated in the same tribe with Magnolia and three other genera, but they are all much closer related between themselves than with the one we have under special consideration. Upon the whole, societies of this genus Magnolia are the nearest allies of *Liriodendron tulipifera*. Outside of the order Magnoliaceæ we shall find the closest agreement in the order Anonaceæ, which is solely represented with us by the common pawpaw *Asimina triloba*. but which includes a very large number of tropical or subtropical trees and shrubs, the best known of which is the custard apple or tropical pawpaw, *Anona reticulata*. Its relative, the pond apple of Florida, will serve us for comparison. Searching still further for botanical affinities we may be surprised to find them in the great Crowfoot family, or Ranunculaceæ. This order is abundantly represented with us, and though including some exceedingly different plants, as the buttercups and the Clematis vines, Marsh Marigold and Larkspurs, they are bound together by obvious ties of relationship, and these same ties will not be found altogether wanting between the lowly wind-flower and our majestic tree. Let us see.

It would carry us far beyond our purpose to-night to undertake to show how many species may have originated, much more so to show how a little anemone may be the terminal end of one series of generations from the same original stock of which another series is our Tulip tree, or the reverse: but it can be confidently asserted that structural similarities, especially in those organs not exposed to modifications through external agencies, means blood relationship or community of descent. Our Tulip tree evidently has not sprung from a magnolia or the magnolia from the Tulip; but the two have had a common ancestry, otherwise they could not now have common characteristics, and if this be so, the same may be said of them and of species belonging to the genera Illicium, Asimina and Anona, only that the ancestral stock in this case divided further back. Who then shall deny the bond of true kinship between the haughty Liriodendron and the humble Anemone or Ranunculus? We call our species the Tulip tree, but the similarity to the Tulip is exceedingly superficial and means nothing of interest to us, while the structural similarities with the buttercups raise questions with which any of us may easily lose ourselves in ever widening thought until we reach as near to the Infinite as our finite minds can go. For the present we may only catch a glimpse backward through the long and misty corridors of time, back through the glacial ages, back through the eons of the tertiary pliocene, miocene and eocene, back through the intermidable stretches of cretaceous times, until somewhere previous to or at the beginning of the latter period, we may find the mythical ancestor of our Tulip tree, as a dicotyledonous, probably apetalous, and doubtless marsh-loving plant. Already there are gigantic tree-ferns to stimulate ambition in regard to altitude of growth, great cycads rear lofty trunks into the humid air, but are rivaled by conifers, perhaps true Secucias which then as now towered above every other form of vegetation, but which then covered immense areas of the earth's surface instead of being pressed into the narrow limits of some sheltering mountain range. Immense oceans covered what is now continental areas and great inland seas supported in their tepid waters strange ganoid fishes and sharks. Huge reptiles chased their prey in the water or through the muddy ooze of the shores, or wheeled in ominous flight through the songless and scentless air. Others, surpassing many times in size the largest elephants of our day, raising their ponderous hulks upon their hind legs, strode through the forests grazing upon the tangled foliage of high, light seeking branches.

In such surroundings, with such associates, in some steaming marsh, we may seek out the scentless, nectarless, many stamened, and many pistiled plant whose numerous progeny, in all their wonderings over the face of the earth, in all their varied fortunes as to rank and position among their congenera, boldly braving enemies or making discretion the better part of valor and hiding away in the thickets or among inaccessible rocks, raising their tall spires to the skies or creeping modestly upon the ground, in all their struggles and variations, have preserved and treasured in their innermost parts, if not upon emblazoned shields and banners, the sacred symbols and heraldic distinctions of the Jurassic ancestor. One momentary glance at this old world quickens our interest in the things that inform us further of it and add new and vastly more important meaning to the likenesses and affinities of parts which we may still investigate in such objects as those with which we now deal.

But without pursuing the subject further of the origin of the species with which we are specially concerned, let us see what can be learned of it since it did come into existence as a species and as a member of the genus which it now solely represents.

In this inquiry we must accept the now universally accepted view among naturalists that each species has had one and only one place and time of beginning. Whatever notions may be held above evolution, all botanists and zoologists, who have closely considered the matter, are agreed that when a species is now found inhabiting regions remote from each other it must have migrated from one to the other or from some third region whence it spread to those now occupied. It has not originated twice. Under the theory of evolution it can easily be shown that a duplicate arrival at the same organization from different beginnings is utterly impossible; and, with or without evolutionary considerations, the known facts of geological and geographical distribution forbid any belief in a double origin of any species

Now for our purpose an exceedingly important discovery was made a few years ago (1875) in the mountainous regions of southwestern China, from which flow the head waters of the Yang-tse Kiang river. We have spoken heretofore of the Tulip tree as a North American species and almost every published work bearing upon the subject tells us that it occurs in nature nowhere else, and has no associate species anywhere on the globe. But twenty years ago a tree was found in the country designated which was thought by the

discoverer to be a second species of the genus. Its leaves, as he found them, had more divergent and more acutely pointed lateral lobes than those of American trees. Had this supposition held good and the separate species been accepted, the case would then have been parallel with that of Magnolia save that there are eight North American and twelve Asiatic species of this genus, with none elsewhere. But further material and closer comparison have been the means of positively identifying the Chinese trees as *Liriodendron tulipifera L.*, without even a varietal difference from the specific type. Here then is a problem to solve. Whatever may be said about the natural distribution of seeds, it is altogether impossible to admit that seeds of this tree should, by natural agencies, have crossed the ocean one way or the other. Even with this barrier removed they could not have been transferred to or from the inland Chinese region without leaving individuals on the way. It is said cocanuts, still possessing vitality, have been carried in the ocean currents across from continent to continent, but this, if true, has little bearing upon the solution of the present problem. The fact that different species of Magnolia exists in the two regions named, and, as we shall see, a very large number of similar cases in respect to other genera, does have some bearing upon our question, but, probably, involves greater stretches of time during which migrations may have occurred.

Another class of facts has now to be considered. Imprints of leaves and sometimes of seeds and fruits in the rocks of different geological periods have wonderfully helped to explain puzzles of this kind, and have helped scientists to unravel the marvelous, sometimes almost incredible, but still authenticated, history of our earth. We have now, as we know, but one living species of Liriodendron. No less than ten fossil species have been described in the Cretaceous rocks of Colorado, Nebraska and Kansas, and what is at first still more inexplicable, in the tertiary beds of Europe at least two species have been found, one of which (*L. Procaccana*) ranges from the extreme north into Italy, the other a southern inhabitant only. Let us remember that since the age of man, on the earth at least, Europe has had no Tulip tree or Magnolia or any close relative of these, yet the fact is indisputable that both of these genera were well represented in the former forests of the country during the miocene and pliocene tertiary. And still further, one of these old European forms, that which was formerly so abundant upon the continent, also occurred in what is now the mid-land regions of

the United States. More astonishing too than this, as well as more fruitful for us, it is the fact that this world wanderer flourished during cretaceous times in Greenland, Iceland, and even in Spitzbergen, in association with many kinds of trees which now require a temperate climate similar to our own. In the cretaceous rocks of Greenland and in those of Colorado, there is a second species common to both regions and this (*L. Meeki Br.*) had coriaceous, persistent leaves, like in these respects *Magnolia grandiflora* of our southern states.

This former occupancy of the land within the arctic circle by vegetation which must have required moderate and even warm temperature, opens up the greatest of all problems of geological history and of physical geography; but that during long ages of time these countries did possess at least as favorable a climate for plants and animals as that of Central and Southern Illinois cannot be doubted. The great continental masses of both hemispheres were then as they are now, in a broad sense, and the great oceans then as now widely separated them. But in the earlier part of this period, North America was itself divided into two continents by the sea extending from the Gulf of Mexico upward over the region of the western plains and the Rocky Mountains, and the waters of the Persian Gulf probably joined those of the White Sea and Arctic Ocean in the Old World. Land connection also pretty certainly occurred either continuously or by scattered islands across from Northern Scandinavia to Greenland, with the widest separation north of Hudson's and Baffin's Bay. It is today true that there is more difference in the floras on the opposite sides of the American continent in the arctic regions, than there is between the European and Eastern America on the one hand, and between Asiatic lands and Western America on the other hand. Band connection also probably existed across what is now Behring's Straits. (These things may be better shown presently on the screen).

With these conditions of things during the cretaceous and tertiary ages and with abundant evidences that the members of our forest floras, as they now exist, are lineal descendants of, if not identical with, trees which, mixed as in our woods, encircled the pole, an explanation is feasible of the present existence of the Tulip tree in North America and in distant China. With the oncoming of the glacial cold all plants were gradually, during centuries of time, driven southward along whatever lines were open to their migrations. Our tree must

have existed over wide arctic areas, and essentially as it now appears, preceding this southward retreat many thousands of years ago. Through all that time and during its wide dispersion, it has retained its primitive characteristics and kept true to itself. Other trees have had a similar history as to origin and distribution, but very few of them have come down through the vicissitudes of time and varying conditions, and have so faithfully continued to hold in each succeeding generation the characteristics of the preceding. The Liriodendrons did, during hundreds of thousands of years of old time, just what in this respect we find them doing in our day. Taken from its adopted home in America to the four quarters of the globe by man, raised by thousands from seed in nurseries, cultivated in various soils under various skies during more than two hundred years, watched by numerous experts, whose business it is to secure and introduce new forms of desirable kinds to the horticultural and gardening world, exceedingly little variation has thus been observed in this tree. While under similar conditions and treatment, elms, maples, lindens, beeches, willows, conifers, etc., have yielded many, often striking variations, our proud species has serenely defied the blandishments of art and composedly held to its first estate. As it survived essentially unaltered banishment from its arctic home and made itself a law unto itself, as well upon the banks of the Mississippi as upon those of the Yan-tse-Kiang, so it lives and leaves, flowers and fruits, germinates and grows from generation to generation under the world altering power of civilized man. A few horticultural powers have indeed been obtained, but they are slight departures from the type compared with those of most other species under the same influences, even with those of near relatives like the Magnolias. The deciduous leaved cypress, the curious Japanese gingko, the great Sequoias of our Pacific coast are other examples of longevity and permanence of type, and others can be cited; but by far the greater number of tree species are vastly more subject to variation.

This persistence of characteristics is another evidence of antiquity of origin and of long ancestral history. In the later milienials of *Liriodendron tulipifera* there has been no chance of inter-crossing with other species, since none existed. In haughty primness, if not in conscious vanity, the proud remnant of an aristocratic race lives and loves, if trees do love, alone. The Tulip tree is a remnant. Though still surviving and bidding fair to survive in vigor-

ous and beautiful old age, it belongs to the past. It belongs together with the Sequoias, the sycamores and the cypress to that age which produced the massive Dinosaurs, Pterosaurs, and Chelonians of whose existence we only know from from their fossil remains now gathered in museums. Plants of much higher organization and botanical rank grow beneath the shade or cling to the ascending trunks of the old Tulip trees. Others too of much more modern date and pattern dispute with them for territory to which all are intruders and upon which none have pre-emptive claims. But when all is said and done, whatever comparisons are made, whatever of value there may be in any other particular member of the floral world, *Liriodendron tulipifera* will not suffer in interest and will not lose our respect and love.

THURSDAY MORNING SESSION.

The Society met in the chapel of the University of Illinois at 9 A. M., pursuant to adjournment, with President Augustine in the chair.

Prof. J. E. Blair, of the University of Illinois, read a paper on the subject of Horticulture at the State University and Experiment Station, which was as follows:

HORTICULTURE AT THE STATE UNIVERSITY AND EXPERIMENT STATION.

J. E. Blair, Assistant Horticulturist University of Illinois.

Mr. President and Members of the Central Illinois Horticultural Society:

The system of education adopted by the horticultural department* of this University and Experiment Station has three aims: To give instruction in the various horticultural subjects, to both regular and special students; to develop horticultural science through investigation and experimentation, and to disseminate horticultural knowledge among the farmers and fruit growers of the state by means of public addresses, public demonstrations, publications and by private and public correspondence.

The horticultural courses offered to the regular students referred to are as complete as those found in any university, and with the possible exception of Cornell, represent a wider range of topics than those taught by any other American

*The system of the horticultural department is essentially the same as that of all other departments of the College of Agriculture.

institution of learning. The required work of the freshman year embraces the study of the principles underlying fruit culture, with the broader consideration of the various essentials of fruit growing. Along with this goes the study of the orchard fruits—apple, pear, quince, plum, cherry, peach and apricot. Each of these fruits is studied with reference to its botanical matter, history, importance and extent of cultivation, soil, location, propagation, planting, pruning and training, fertilizers, cultivation, harvesting, storing and marketing, varieties, insect enemies, diseases, spraying and profits. In each instance the information imparted to students is by means of lectures, text books and practical exercises and excursions. For this latter information the extensive orchards of the Experiment Station are called into requisition, as are also neighboring fruit plantations, such as that of Senator Dunlap at Savoy.

All of this work which I have been describing covers only the studies given to the student during the first term of his freshman year, the winter term being devoted to the subject of plant breeding and propagation. This includes the study of the methods of securing and perpetuating desirable varieties by self and cross fertilization or hybridization and by selection. The latter part of the term is devoted solely to the propagation of plants by seeds, cuttings, layering, grafting and budding. During the spring term the student is made familiar with the cultivation and management and other studies relating to the strawberry, raspberry, blackberry, dewberry, currant, gooseberry, cranberry and juneberry.

It will be seen by the foregoing remarks that the freshman years' work in horticulture is of a general nature, and is simply intended to give that general idea of horticulture which all students coming to the College of Agriculture should have. But it must also be remembered that this introductory work leads up to the advanced courses, which we will now proceed to consider for a few moments. During the fall and spring terms of the second year the students are offered a course in viticulture, which embraces a comprehensive study of the entire subject matter of grape growing. The winter term of this year is devoted to a study of plant houses, their construction and methods of management.

With the opening of the third year the student finds himself in a position to take up the study of forestry, which embraces the study of forest trees and their natural uses. The relations of forest and climate are studied, and the

general topics of forestry legislation and economy are discussed. At this time also he is offered a course in landscape gardening, which includes the study of ornamental and landscape gardening, with especial reference to the beautifying of home surroundings. This subject is taught by illustrated lectures, and by visits to the plantings in the vicinity of the university. During the winter term of the same year the horticultural student is given a thorough course in economic botany, or the botany of cultivated plants; touching especially those plants affecting agricultural and horticultural interests. The spring term of the same year the student's attention is devoted wholly to the subject of vegetable gardening.

Floriculture, which is the study and management of conservatory and house plants, is designed not only for the horticultural students, who may wish it, but also for the young ladies of the university. This study runs through the entire year, and may be taken up during any year except the freshman. All courses are open to women.

The horticultural department also offers a course in practical horticulture, which is intended primarily to give practical training for all those students intending to follow horticulture as a business. This course may be taken during any term and during any year.

The foregoing represents the different phases of horticultural studies offered to undergraduates, but apart from these there is a course for advanced students and graduates which enables them to pursue special investigational work. It is also well to mention in this connection that special students are admitted to any or all of these courses, and that a short winter course is offered to those who can only take up the work for a short time.

In all of our instructional work, both for the regular and special students, we aim to bring the theory and the science of our work down to a practical basis, and to suit it to the needs of the men and women who may come to us from the various districts of the state.

The purpose of the horticultural department of the Agricultural Experiment Station of the University of Illinois is to bring home to the farmers of this state the importance of the practical application of horticultural science, and to discover the facts and processes that will be of permanent value to the farming and fruit growing people of Illinois. In the choice of subjects it endeavors to select those which possess the greatest importance to the horticultural people

of the state. At all times there is an earnest effort to give the investigation careful and fundamental character, in order that the results obtained may be real contributions to horticultural science.

This station was established in 1887 by the United States goverment, and since then the horticultural department has published fourteen bulletins, or parts of bulletins, which have been sent out to every locality of our state. The experimental work embraces the testing of all varieties of fruit, etc., which can be secured for the purpose, and up to the present time we are free to admit that perhaps too much energy has been spent in this phase of the subject, which is almost wholly a local consideration with the fruit grower at least. In tree culture experiments are now in progress testing the cultivation and management of orchards, testing the hardiness of root grafted and double-worked trees, testing the improvement of native fruits, the winter protection of trees and small fruit, protection from mice, rabbits and insects, the various methods of propagation, the investigation of pear blight, and the testing of varieties of the pear, plum, cherry, peach and persimmon. In vine culture we are at the present time testing 174 varieties, investigating the methods of training and soil treatment. In small fruits all the leading varieties are being grown with the same points of study as the grape. Most of the varieties catalogued have been or are being tried. The influence and effect of more than sixty different insecticides and fungicides is being tried at the present time. One of the newer experiments and one of great promise is that of the production of new varieties of apple from seed, having in view the possibility of procuring a better apple than the Ben Davis for the state of Illinois. The testing of wood durability for vineyard and fencing purposes, and the cross fertilization of plants are other experiments authorized and which have been begun.

The grounds devoted to the horticultural work comprise in all about fifty-five acres, and are well stocked with fruit trees, small fruits, forest trees, ornamental trees and shrubs.

As almost every phase of experimental work represents new thoughts and new ideas it would be impossible at this time to give an adequate conception of the methods of procedure in carrying to its finish any one piece of experimental work; but as aforesaid, every effort is made to make our discoveries of practical application to the horticultural people of this state.

I come now to the third division of the subject with this paper opened, namely, that of disseminating horticultural knowledge among the people for whom this work is intended. The station and college working in conjunction with each other are the means of disseminating general and miscellaneous information on horticultural and agricultural topics, and the workers cheerfully devoted the necessary time to private and public correspondence and to personal interviews. A new feature of our work and one which was taken up by the horticultural department this year, is that of giving practical demonstrations of methods and operations of different phases of horticultural work to those people especially needing it. Such a demonstration was given at the close of the horticultural meeting held at Vienna, Nov. 24, and was witnessed by over 200 farmers and fruit growers. The particular demonstration was that of spraying plants.

The publications, bulletins, circulars, reports, etc., issued by the station hardly need to be mentioned in this connection, but are important adjuncts to the work which, in view of the wide and varied horticultural interests of the state must assume increased importance from year to year.

In further conclusion let me say that visitors are at all times welcome at the horticultural grounds, where pains will be taken to explain the different experiments in progress.

TREES—THEIR VALUE AND HOW THEY AFFECT US.

G. J. Foster, Normal.

Ever since the time when man was placed in the garden of Eden, with the command to keep and care for the trees therein, this subject has been one of the utmost importance to the whole human race—whether savage or civilized, bond or free, a dweller in humble cot or royal mansion, learned or unlearned—all are under their influence and are affected by them. Not only from the standpoint of their material value and the economic uses to which they are put, but as the great conservators of nature's forces, those ceaseless forces to which we are continually subjected and over which we have no control are so tempered and brought into harmony with each other and the regions which they surround, that human life is not only possible but most desirable, and in this latter sense perhaps more than the former is their true and real value seen, as in the principle of that which underlies and supports the material always being of more importance than the material itself. For untold ages their material

worth has been recognized, but this more indirect though not less value has been overlooked, and man, ever careless of the future, looking only to present need or the gratification of his destructive nature, has been continually and wantonly laying waste his real protectors.

There is need, a great necessity indeed among us of to-day, and here in our own state, of a still more extended knowledge and interest in this subject of trees, for I doubt if those most interested are as yet half awake to even their material value. When this state was admitted to the Union, only a couple of generations since, it was regarded as almost barren of trees, so extended were its prairies, and so vast were its stretches of treeless land; but tell me, you who are interested in this matter, and you who have been planting trees more or less for many years, tell me whether the material value of the trees of Illinois to-day equals that of the day when first she became a state? As the small child with its tiny hand scatters the leaves of a book whose worth is unknown, and delights to see them fall about it on the floor, so do we approach our venerable groves, and with destroying hand, lay low and consume these noble specimens of their kind, that have withstood the storms of ages, the shelter and shield of all animal life. It is not within the scope of this paper to more than call attention to this subject, with the hope that some one at least may be stimulated thereby to redoubled energy in his efforts along this line in the way of cultivation and care of all valuable trees. Imagine if you can the wealth and effect on us of to-day, if seventy-five years ago one-fourth of each treeless section of our state had been planted with such trees, fruit or forest or both, and which had been protected and cared for since, the value of it could not the counted in dollars and cents, any more than the effects could be weighed in pounds and ounces. Time alone produces trees, they are not manufactured, neither wisdom, wealth or work can make them, they grow, and until we come to learn more fully the value of time in this connection, and the fact that we can control or utilize the present moment only, shall we make much progress in the production and care of these best gifts to man of all God's inanimate creations. We need to think of these things, to study them, and teach them to our children. A feeble effort has been properly made by the inauguration of Arbor Day in our public school system, and while only kindergarten in its method, is nevertheless a step in the right direction. One day in every spring, a part of the children are taught is Arbor Day, which they

are told mean the time to plant a tree. This as stated, is well as far as it goes, but this is not enough, and here let me suggest an Autumn Arbor Day as well as one in the spring, and owing to the extent in the latitude of our state, one day of the southern half, and another day for the northern half of the state should be recommended. On these days the children should not simply be shown the practical part of the planting; they should be taught some of the great truths and facts in connection therewith, so that a general interest and love for our trees is begotten within them, then there will be no more trouble to get them to plant trees than there is now to get them to eat the fruit or nuts of the same; indeed you could not easily prevent their planting them. Our eminent friend and professor, T. J. Burrill, has said "No one who loves trees can be a bad man." This being true is an all sufficient reason in itself for much greater exertion on our part to impress upon the minds of the youth the great and lasting benefits that come to us from this source. I would that every one of the two millions of public school children of Illinois could be taught this lesson of love, and learn to see more of their beauty and the greatness and goodness to be derived from this love of trees. Can you estimate the effect on our state and nation during the next couple of decades could we enforce this lesson? Teach them that trees are a necessity, and, but for the trees that were planted ages before man set foot on our continent, his existence here would have been impossible. Our fore-fathers could not have planted the seed, our great nation would have been unknown, and this country would to-day be only a howling wilderness, barren and uninhabited by man or beast; teach them that as they love their home and country, they should love and protect her trees, for only as they are maintained both in forest and in fruit, shall we be able to maintain that high and noble prestige among the nations, to which we have attained. Do you say this is vain, mere idle speculations? Look at other nations in the days of the past. What is the lesson taught by the history of Spain, in ancient times one of the most powerful of earth and one of the most luxuriant garden spots of the world, said to have been the granary of the Roman Empire, but what is her standing to-day. Her noble forests which existed in the time of the Moors were ruthlessly swept away and it is not without good reason that learned historians ascribe the economic as well as political decadence of Spain in great measure to the evils which the destruction of her trees brought with it. What about

Italy, southern France and many others, which in the day of their greatness reared astonishing monuments of their civilization, but having destroyed their trees, they have been, as it were, weighed in the great scales of time, have been found wanting.

Climate conditions could not be controlled; their springs dried up and their creeks disappeared at one season of the year, and became raging torrents; their fertile plains were parched; their orchards wilted and died, and their land has become desolate. Austria and Germany, in the light of this history, are today striving to maintain one-fourth of their territory in trees, believing it to be for the best interests of agriculture and, not only this, but as a necessity for the success and perpetuity of their governments; while France is making frantic efforts in the same direction, in trying to redeem her lost forests. Is it not true that a century ago there was no land so rich in the most valuable shade and fine forest trees as our own land? The North American forests and groves were North America's pride and glory. Did not our fathers squander many of these in wanton wastefulness, and are we not doing the same thing, sacrificing the God-given groves of our state, for what? That with which the market is already over supplied: a few more acres of corn or a few more bushels of oats. Then we stand amazed and astonished at the frequent drouths, flooded creeks, high water in the rivers, and the deadly cyclone that sweeps across the land. The wealth of a country is largely derived from its fertile lands, and its fertility depends very largely upon atmospheric changes and conditions; our trees more than any other one thing help to maintain these conditions in their normal and proper conditions. Therefore, it becomes of the first importance that we maintain a standard of regular succession by continued plantings, and hence the indiscriminate destruction of trees without reproduction or renewal is a direct blow to our best welfare. In view of this, several states have already begun to put forth earnest efforts in this direction; and, for this reason, our national government is endeavoring, as best it can, to promote the planting of trees on the treeless public domain, and also to stop and prevent the further plundering and devastation of the public timber lands, which only a few years ago was considered the property of any one who chose to use it and, therefore, was the cause of much angry comment when the secretary of the interior department of our government applied to congress for forestry legislation. Now, however, this matter has come to be looked upon as a necessity, and for the protection against

denudation of the head waters of some of the principal rivers. President Harrison set apart by executive orders about thirteen million acres of forest reserves in the western states and territories, and President Cleveland in like manner reserved various districts, aggregating twenty-seven million acres, all for that purpose. I ask you horticulturists of Central Illinois, does not the prosperity of our country in future decades depend as much upon wise tree legislation as upon currency legislation? Do we not need protection for the trees as well as protective tariff? And we need government help as well as individual effort. We hear much said about sending missionaries to foreign lands to benefit the heathen, but in our judgment the average man or woman can do quite as much good for the race not far from home, in teaching the masses to love and cultivate our trees; for, notwithstanding the boasted intelligence of the people, is it not true that thousands whose lives are narrow and dwarfed, pinched by their surroundings and the want of knowledge, without cultivated fruit or flower, poorly sheltered, and fed on only that which tends to further lower their natures and their thoughts to that of the Eskimo level; still living on the prairies, bleak and desolate, in fact, out of doors without so much as one tree for shelter or for shade, and their shivering brutes with nothing but a corn-stalk or a wire fence to shelter them from the merciless winter gales: What a field of labor—show them there is a better way; teach them to plant, to cultivate and care for the trees, and that not only for their intrinsic worth alone, but quite as much for the effect which this work will have in bringing into their own lives better and broader views of life and the relation which it sustains to the world about them, then the fixed habits of industry, honesty and integrity which this enjoins, coupled with a love of the beautiful and noble around them, they will continue along the line of best citizenship, in all those words imply, ever onward and upward from Nature up to Nature's God. Nor is there anytimg to be lost. We should be in earnest, as our opportunity is fast passing away, a million of acres of trees should be planted in Illinois annually for the next twenty years; millions of fruit trees by the individual. Also quarter sections of forest trees by the State: and should the Legislature in addition offer the boys a bounty for every little tree planted and cultivated, instead of for the killing of small birds, it would be of more benefit to the boys at least, and not less to the state, for if the state would spend more money in the direction of tree growing it would need to spend less in the construction of asylums

and the various penal institutions which it supports. Health and happiness is the one great desire of all hearts, and what contributes to this end more largely than agreeable surrounding? Then plant trees, for I am persuaded you will all agree with the writer in this at least, that the shadow of some grand old tree is most agreeable during the long midsummer day. How grateful to the weary one, and how comforting to the feeble and sick. Likewise is the presence of trees not less naked and noticeable in the winter season, how pleasant the thought also of plenty of fruit in all its variety all the year round. To him who has secured the comforts of trees, and fruits, and flowers, and nuts, most surely has the choicest blessings earth can bestow, and to him more than to another is granted good health and long life in addition to that which our constitution guarantees.

DISCUSSION.

MR. C. G. WINN—In the early settlement of this country the settlers fled to the timber. They used to think at that time we would ultimately run out of timber. But you can go down to the river bottom and buy timber now, land and all, for $12 to $15 an acre. This is an iron age and not a timber age. You can fence with iron now cheaper than you can with lumber. You can bring lumber and shingles from British Columbia cheaper than you can afford to raise the trees. Land is too valuable here to be planted in trees for lumber. It can be put to more profitable use. A certain amount of trees is all right. It is all right to plant out orchards, but when it comes to talking about planting one-quarter of your land in trees for timber it is out of the question.

THE PRESIDENT—I think if we do not take better care of our trees we will wake up some morning and find ourselves in the same condition Spain is with regard to our agricultural interests.

MR. STANTON—We might compromise by clearing off forest trees and setting out fruit trees, and in that way preserve out climatic conditions.

THE PRESIDENT—Unless there is some objection I will refer Mr. Foster's paper to the same committee to which

reports of the secretary and president's address were referred because of the suggestions he has made in the paper. I will also appoint a committee of one to co-operate with other committees that I understand have been appointed by other organizations in securing if possible the teaching of horticulture and botany in our public schools in the rural districts. I will now appoint as members of the committee on final resolutions J. W. Stanton, Richview, Ill.; A. M. Augustine, Normal, Ill.; L. H. Reid, Grand Rapids, Wis.

The next topic on the program is "The Best Variety of Apples to Grow for Market." We will hear from Mr. Wallace on that.

THE BEST VARIETY OF APPLES TO GROW FOR MARKET.

J. T. Wallace, Neoga.

Probably no question is more frequently asked, and no question oftener evasively, or unsatisfactorily answered, than, What are the most profitable varieties of apples to plant for market? So much depends on the soil, the location, the treatment, and the season, that it seems almost impossible to answer such a question intelligently, and for any one to dictate or advise what is best for the great state of Illinois would be simply adsurd. So I will try to confine this paper to my own vicinity, the central part of the state, knowing full well that many of you may say, and that correctly, what he does not know could fill a volume. If we should allow ourselves to be decoyed by advertisements of new and wonderful fruits, or listen to the flowing eloquence of the tree peddler, each farm would soon become an experimental station, and disappointment would be the result. First, let us see if early summer apples can be grown with any reasonable certainty of profit, and if so, what varieties, and what proportion of an orchard would it be wise to plant.

Although the demand for summer fruit is limited in comparison with that for winter varieties, I believe the planting has not kept pace proportionately, and should give it a good share of my attention. As to varieties, I should select a few trees of Early Harvest and Duchess of Oldenburg, but the majority of my early fruit would be Maidens Blush and Stanard. This valuable apple is probably but little known

throughout the state, so a few words of introduction will be necessary. The original trees in our section were bought of Spaulding & Co., of Springfield, in 1869, for Duchess, and as we were not well acquainted with the variety, the difference was not noticed till about ten years ago, when I began shipping them, marked Duchess. The commission man wrote me, "These are not Duchess. What are they?" So I brought the matter up before the state society at its Olney meeting, and as no one knew it from my description, Mr. Webster looked it up for me and pronounced it Stanard. P. C. Sears, of Chicago, also says it is undoubtedly that variety, while Mr. Dunlap says it undoubtedly is not Stanard, but he does not know what it is, so we will continue to call it Stanard till further instructions. The tree is such an ugly crooked grower in the nursery, that it is hard to get them propagated, but if kept properly pruned it makes a beautiful open spreading top. It is supposed to be of Russian origin, being thick leafed, and a rapid, hardy grower; its habit of growth is almost drooping. Though it does not commence bearing as early as some varieties, the enormous crops it does bear amply repay waiting. The fruit is large, to very large, round, with red stripes, becoming a deep red when fully ripe. It is sprightly acid, covered with a peculiar bloom which makes it very attractive. Its season of ripening is from the middle to the last of August, and although it comes right in the rush of summer fruit, it sells readily on account of its beauty, size and keeping qualities. For fall and early winter varieties I should select Jonathan and Grimes' Golden. They now sell about together and are always taken in preference to any other kind that we are now acquainted with. In selecting winter fruit, I have adhered to the theory that Ben Davis was being largely overdone, and that on account of its quality, and almost universal planting would not be wanted, but I am becoming somewhat convinced that it requires a great many theories to overcome a fact, and the fact is thoroughly demonstrated each year, that all things considered it has made more money in our section of the state than any other variety. Out of five thousand barrels that I have handled this season, fully four thousand of them have been Ben Davis, and though they were not so much sought after as some other kinds, and did not command quite so high a price as Willow Twig and a few others, they made more money to the acreage than any of the others.

The Willow Twig with us, outlives almost any of the others and bear well after most other kinds are gone. The

Newtown Pippin seems to bear quite well and commands outside prices, of the newer varieties. Aiken and Mammoth Black Twig are very promising. I have only fruited them on top grafted trees, but I should not hesitate to plant them largely. There are of course, others that are worthy of cultivation and have their friends, but I only mention those I have tested, and believe to be most profitable, taking all things into consideration.

I do not think it wise to invest in many new or untried varieties. Neither would I plant the many varieties, in fact, for a commercial orchard, and should confine myself to as few varieties as possible. Viewing the situation as I now do, I should plant one-fourth of my orchard to summer varieties such as I have mentioned, but mostly Stanard, one-fourth to Jonathan and Grimes' Golden, largely the former, and the remaining one-half to Willow Twig, Ben Davis, Mammoth Black Twig, and Aiken. If I were confined to one variety of each I should plant Stanard, Jonathan and Willow Twig, and if restricted to only one variety as it appears from the programme of this meeting, I should plant my whole orchard to "Jonathan" and build a cold storage room large enough to contain them, for I am of the opinion that in the next decade only the best will be in demand, except on occasional years when short crops are the rule.

DISCUSSION.

President Augustine—In this connection I would ask, Do you know anything for or against the Missouri Pippin? I think it is an apple we are not giving enough attention to.

Mr. C. G. Winn—I have seen the apple and I will say if you want to make money quick out of apples the Missouri Pippin will do it. It is a good deal like ninety-day corn. This apple will throw all its vitality in the first few years of its bearing life. It will bear itself to death and then get out of the way. If you want seventy trees to the acre plant the Missouri Pippin, but don't do it with the Ben Davis or any other variety. You can get money quicker out of the Missouri Pippin than any other apple I know of.

Mr. Mendenhall—I would like to ask Mr. Wallace to tell me, if he can, about the soil around Mattoon, with reference to its growing the same kind of apples that they grow at Neoga?

MR. WALLACE—Any of the varieties that have been successful on black soil would do. We have some very fine apples from the region of Mattoon this year. Principally the Ben Davis, and this year the Genitans. Ordinarially the Genitan is not very profitable, but this year it has done well.

MR. RIEHL—There is a revolution going on in the matter of varieties of apples. I have said as many good things about the Ben Davis apple as any one on this floor, yet I have for sometime been a little suspicious that there were more Ben Davis apple trees being planted than is good for the apple trade of this country. We have got to furnish something better than the Ben Davis if we expect to furnish the best variety of apples to eat. (Applause.)

THE PRESIDENT—The next topic on the program is, "How can farmers be induced to take a greater interest in horticulture?"

We will be glad to hear from Mr. Riehl on that subject.

HOW CAN FARMERS BE INDUCED TO TAKE A GREATER INTEREST IN HORTICULTURE?

E. A. RIEHL, Alton.

In asking this question it seems to be granted that it is desirable that farmers should take a greater interest in horticulture than they do. That they do not take the interest they should the unadorned and cheerless surroundings of many of our farm homes, and the lack of fruit on most farmer's tables, too plainly prove.

But why should farmers take a greater interest in horticulture? Why are we horticulturists so anxious to have them do so? What does it concern us? Will it not be a detriment to us in a business way? Will it not curtail the markets for our products? These are some of the questions that will present themselves to the minds of people who are not well acquainted with horticulturists and their business.

We want all rural residents to enjoy the pleasures and benefits to be derived from horticulture. We want to see every rural home made attractive by proper ornamental plantings. We want all dwellers in country homes to have a constant supply of fruit on their tables, knowing that they can have all these things with but a small expenditure of time and money.

We know that if they do have these things they and their families will be healthier and better, physically and morally. Their sons will be better content with farm life and be less liable to look with envious eyes at the apparently more desirable lives of their city cousins. Their daughters will not be so liable to make undesirable matches in their eagerness to get away from the old home. There is no fear that our business will be injured by the farmers planting fruits for their own use, for those who do not grow and use fruit on their tables daily, seldom, if ever, buy. I am fully convinced that if all farmers were to plant a full line of fruits and get accustomed to have them on the table daily we would be able to sell them much more than we ever do now, for should they ever fail to have enough of their own growing they would buy rather than do without.

It being granted that all farmers should take a greater interest in horticulture than they do, for the best interests of themselves, their families and the general public; the question then arises how can we best induce them to do so? This is no easy task, for those whom we want to reach, and who need our teaching most do not come to our meetings. They are not here to-day. They never are. How then can we reach them and get them to do what we so well know would be for their best interests? We must do as did Mohammed. If the mountain will not come to us we must go to it. But how can we do that? We must make our own homes serve as object lessons to those around us by surrounding them with ornamental trees, plants and flowers, and grow an abundant supply of fruits for our tables. Nor is this all, we must not stop at that, we must make our neighbor farmers see and appreciate our horticultural work. This can best be done by organizing local societies; such societies if properly managed can do a great deal of good. If no more than a half dozen families can be interested at the start, it will do for a beginning. Meet from month to month at the different members houses; take as many of the family as you can; bring along a basket with eatables which turn over to the hostess and let her with her "maids of honor" combine the whole and serve the lunch at the proper time, in this way all will contribute, making the tax a light one on the hostess and the amount of provisions will regulate itself to the size of the attendance. Have a president to preside at the meetings, a secretary and treasurer to keep track of the business. Have a program arranged with speakers to open the discussions. Do not confine yourself

entirely to horticultural subjects, but discuss topics also that will more concern your farmer neighbors. Invite all to attend and take part in the discussions. In this way you can induce many of your farmer neighbors to see what you are doing, and little by little you can instill into them a desire to have better home surroundings and supply their families with fruit.

With a little effort and tact it will be an easy matter to get farmers to plant a few ornamentals about their homes and a few berry plants and bushes in their gardens, especially if you can arrange to have them visit you when you have something to show that is ripe. You will be more apt to make an impression upon their minds if they are accompanied by their wives and the younger members of the family, who will also be apt to jog the memory of the head of the house at planting time and thus insure the fulfilling of promises made when the object lesson was before them. You will not be able to reach all farmers by this or any other method, but each convert that you make will become a distributing centre to others around him, and thus the good work will go on until our land will be full of attractive rural homes, occupied by a healthy, moral and contented people.

DISCUSSION.

THE PRESIDENT—Mr. Riehl, do you think that the present system of farmers' institutes can be used as a medium through which this knowledge of which you speak can be disseminated?

MR. RIEHL—Certainly; that is one other form of doing the same work—by having agriculturists attend these meetings, but that comes but once a year, and not as much good can be done as by neighborhood work. The great trouble is the men who most need to be reached do not attend farmers' institutes. I think the better way is to get local agricultural societies in every community.

MR. REID—I think we should adopt a suitable text-book on horticulture in our public schools and have the subject taught there. In that way we can instill into the minds of our youth the great scientific truths of horticulture. Then all mankind will know something of horticulture. Missionary work is needed along those lines in all parts of the country.

Mr. Hossack—About twenty-years ago Mr. M. L. Dunlap, of Savoy, organized a farmers' club among us then young farmers. We were compelled to attend a meeting of the club once every month. At each meeting we took up just one subject and went over it pretty thoroughly. For instance, as spring arrived we would take up the subject of oats and go thoroughly over it. Then we would follow with the subjects in their order of potatoes, corn, stock and fruits. Reports of those meetings were sent every week to the Chicago Tribune by the late M. L. Dunlap over the signature "Rural." I have often wondered why it is such meetings could not be arranged in the various localities and continued.

NOTES FROM AN AD-INTEREM TRIP NORTH AND SOUTH.

A. M. Augustine, Normal.

This is not a very suitable title for my paper but was the best at hand. It carries with it the impression that these trips, more properly speaking, were taken in the interests or by the direction of the Horticultural Society which is not the case, but were taken entirely upon my own responsibility for observations and help in my own work. I will mention a few things that interested me in a practical way during several trips I made through portions of Canada, Michigan, Tennessee, Mississippi, Louisiana and Georgia, paying more attention to the south, however, for I believe we are not generally as well acquainted with that portion of the country as we are with the north, and undoubtedly we have more to fear from the south in competition than any other section of the country.

We often in traveling through fruit districts new to us gather up here and there new ideas of more or less worth, but for myself, and I believe the majority of us as well, the one thing that contact with practical fruit growers does is to continually bring before us, continually rub into us and everlastingly hammer into us the key stone of success in horticulture and that is, proper cultivation.

I do not know that it has ever occurred to you, but certainly there is a similarity in the fact that the men who are honest with their orchards, in the care they give them, are the men who always pack honest fruit. These are the men who, when they advance a new idea, it is worth investigat-

ing. Seeing the evil results of negligent treatment of orchards and the excellent results of proper care has undoubtedly been of more value to me than all other lessons combined.

I have two gentlemen in mind who have orchards located nearly a thousand miles apart, viz.: Mr. R. Morrill, of Benton Harbor, Mich., and Mr. Hale's orchard, of Ft. Valley, Georgia. I do not know that they have ever seen each other. They are the most successful horticulturists I know, and their orchards receive the most minute attention of any orchards I ever visited. A strict and almost provoking attention to details has returned them from 25 per cent. to 40 per cent. more for their fruit than their neighbors received. I have seen success and failure staring at each other across a fence many times and nearly always when the facts were learned this same reason, cultivation, was at the bottom.

Competition is supposed to be the life of trade, but I am afraid it is going to be the death of some of us if we are not careful. It is almost impossible to realize how rapidly certain sections of the country, especially the south, are coming to the front as competitors in our work. The low price of cotton has made it necessary to look for other fields of work for investment in that country. The railroads and capitalists have come to realize its possibilities and are doing all they can to promote fruit growing. In Georgia, for instance, the horticulturists instead of getting rates of one and one-third fare to their meetings as we do, get free passes. Perishable fruit in New Orleans is only about twenty-four hours from the Chicago market by freight.

The Georgia orchardists have evidently overdone the Elberta peach. Many of them wish they had more Sneed, Lady Ingold and Tillitson. The Elberta grows to perfection there without a doubt, but the Southern Illinois and Michigan peaches are very much in the way when it goes to market.

The Japan plums are attracting much attention. The three varieties, Burbank, Red Nagate or Red June and Abundance seem to be the most promising, and by the way, don't let anyone sell you a Red June plum for a dollar or more per tree if you can get Red Negate for fifteen cents, for they are one and the same thing, even though the National Pomological Society reports that one succeeds better in some localities than the other.

The Japanese persimmon seems to promise very well for a new fruit, but it is a question as to how the people are

going to take to it for an eating fruit, and whether it will pay commercially, however, it seems that taste is being educated somewhat in this direction.

One thing that was quite surprising to me was the fact that the pear blight is about as bad one place as another from Ontario to the Gulf. Great tracts of LeConte pear have been planted south, but I don't remember of seeing an orchard but what had more or less blight in it, and usually more. At Ft. Valley, Georgia, I saw quite an orchard of large trees, from six to eight inches in diameter of LeConte, cut back to a short stump and sprouting out again. The LeConte will never be of value for anything but home market and canning. It is far surpassed in every way by the Keiffer.

I cannot refrain from giving one illustration of the many different theoretic remedies the various horticulturists have for pear blight. A gentleman in Tennessee was telling me of a small orchard of Keiffer pear planted some years ago. He had only one tree left this tree had a grape vine growing beside and over it which had almost smothered the life out of the tree, and strange to say it grew and bore fruit while all its brethren died, and he thought if people would just plant grape vines and let them run over their tree they would not be troubled with blight.

One thing that has helped horticulture in the south, they have not branched out in may lines as a rule. They have stuck by the fruits that the old native fruits growing there have show to be reliable. It was the way the native peaches grew and gave annual crops around Ft. Valley that prompted Mr. Hale and others to establish great orchards there.

The best fruit lands adjacent to the medium sized towns does not cost much more as a rule than we have to pay a year for rent. This in a large commercial orchard is quite an item. To be sure this land will not raise as much corn to the acre as our land will, but it does seem to grow fruit as well. And besides, these people have a forage plant there which they have taken advantage of that we are sadly in need of something to take its place here, the Cow Pea. I doubt if any of us realize what a big thing that little Cow Pea is. It can be raised as a second crop there and do as much toward enriching the land in one year as clover will do with us in two.

Then again, labor can be secured at a much less figure than here. The negro women cannot be excelled in most of the work of handling fruit and they work and work as hard or harder than labor here, from sunrise to sunset, and are

content with from 25 cents to 35 cents a day. And then the severe winters we have here that so often injure our stock are no terror there.

I do not believe there is any more money to be made in our line of work in the south than we can make here. In fact I doubt if there is as much to be made there as here for their climatic conditions will always limit them to certain lines of fruit growing.

I mention these few facts simply for this reason. We must confine ourselves to the fruits we can grow here that will not come in such direct competion with those produced eslewere if we wish our work to be profitable. Many of our horticulturists have already seen this and taken advantage of it; others will have to learn by repeated and sad experience. Apples, cherries, raspberries, gooseberries and currants will never come from there to compete with us for they cannot grow them; and in fact as that country developes more it will be a market for us.

Then another item in which some other sections of the country seem to be in advance of us. we do not make as good use of our waste products as we should. One orchard I have in mind that has about 2,400 acres in cultivation, and will ship in a reasonably good fruit year several hundred carloads of peaches. have a plant on their place that uses all their culls at 25 cents a bushel. At this rate I don't see how they can lose money if their orchard turns out all culls. But we have had so many papers heretofore on this subject and so many of you know much more about it than I do that it will hardly pay for me to dwell on it too long, though I do believe this is such an important question that we ought to have lots of it.

In regard to cultivation, the successful orchardists north and south seem to carry out almost the same ideas, and I will only speak of a few very important implements. The small gang plows that put the ground in good condition so rapidly and so thoroughly in the spring, and then the cut-away harrow that is very valuable if the soil becomes a little baked. If the ground is in as good condition as it should be the breed weeder will do more work and better than any other implement. The advantage to be gained by using some of these tools is that the cultivation is not only more properly done but it is done far cheaper than in the ordinary way.

—30

I believe there is a growing tendency among horticulturists everywhere to plant younger trees than heretofore. There are several good reasons for this; the expense of freight and packing is much less, the cost of planting is reduced a great deal, and so far as my own experience goes the trees not only catch up with the larger trees, but are undoubtedly far more thrifty from the start and more capable of withstanding severe drouth and high winds. Coupled with this and practiced much in the south is what is known as the stringfellow method of planting which is cutting all or nearly all the side roots off and trimming the tops back to a whip. I am not prepared to express much of an opinion upon this method though I do think it is wise for us to try it on a small scale. I used this method last year in planting 15,000 trees with excellent results and I shall continue to use it. With a gang of fourteen men, most of them negroes, and in very unfavorable conditions of weather, we planted over 3,300 trees in a day, this included measuring and laying off the land, but soil and climate may be strong factors in the results of this method.

DISCUSSION.

Prof. Blair—I wish to indorse the remarks made by Mr. Augustine in regard to cultivation. I am convinced the horticulturists of Illinois must cultivate more than they do their fruit plantations. My visits to the experiment stations lead me to believe this is absolutely true. The principal thing we gain by clean, constant cultivation during the summer months is the conservation of moisture. I have made several tests this summer and have found the orchards that were cultivated would have during the dryest times from five to fifteen per cent more moisture nine inches below the surface than where there was little or no cultivation. That is a point we must recognize and take advantage of, and take care of our trees better, so as to give them all the moisture they should have during the hot summer.

Prof. Burrill—We have not given enough attention to horticulture. I also think we would do well to prune the tops thoroughly well back, as well as to prune the roots. My observation is that trees pruned well back do better.

MR. WALLACE—I would like to ask how much water a tree that is capable of bearing ten bushels of apples will consume in a day?

PROF. BURRILL—No man can tell. One of the wonders of vegetable physiology is the amount of water that does escape from plants and trees in our summer weather. From experiments I have made I have found on an average in ordinary sunshiny summer weather an ounce and a quarter per square foot per day. That means that a large forest tree will throw out forty-eight barrels of water during a day, each barrel holding forty gallons. I take it an apple tree capable of bearing ten bushels of apples would throw off from one-fifth to one-tenth that amount of water. Certainly it takes a large quantity of water to supply an apple tree large enough to bear ten bushels of apples.

MR. WALLACE—If an orchard is planted with the trees thirty-three feet apart where is the best place to fertilize the trees in order to get the most benefit?

THE PRESIDENT—I believe that was discussed yesterday, and the conclusion was that fertilization close to the tree is not so important.

Recess until 1:30 p. m.

AFTERNOON SESSION.

The society met at 1:30 P. M. pursuant to adjournment. President Augustine in the chair.

The first order of business being the election of officers for the ensuing year, G. J. Foster, of Bloomington, was elected president; H. L. Doan, of Jacksonville, vice president; A. M. Augustine, of Bloomington, secretary and treasurer.

THE PRESIDENT—The next thing in order is a paper on "Fruits on the Farm," by H. M. Dunlap, of Savoy. He is not present as we hoped he would be, but he has furnished an excellent substitute—Mrs. H. M. Dunlap. She knows as much as anybody about what fruits we should have on the farm.

Mrs. Dunlap said: Mr. Chairman, I have not prepared anything to say on this occasion. The supposition was Mr. Dunlap would send his paper, but I presume he has been so much engaged in legislative work that he has been unable to prepare a paper for this occasion.

Of course I am greatly interested in fruit. Sometimes I am almost imbedded in it, especially in the fall when I begin making apple butter. I sometimes feel we ourselves lack missionary spirit. It seems very sad to be when I hear of so many children starving that they cannot be supplied with fruit. When I see farmers who have possibly a half a dozen fruit trees on the farm, and no desire to set out more or cultivate what they have, I conclude horticulturists have failed to do their duty—as missionaries in that respect. Farmers think they can't profitably put out anything but wheat, corn and oats. That is what is the matter with the farmers to-day. The farmers should have fruit above all things. The condition of their health is due largely to the fact that they have such a small variety of food. If I get on the subject of food I may say too much. Farmers do not have enough fruits and vegetables. It is a noticeable fact how few men who eat largely of vegetables and fruits drink liquor or chew tobacco. It may be we would have less drunkenness if the system was not starving for that principle or element which fruit would supply. They want something. They don't know what it is, and the first thing we know they are drinking. There may be a great deal more in this food question than you have any idea of. I have sat down to tables bountifully supplied, and yet went away from that table hungry. I was not fed. No fruits were on it. Farmers, as a rule, think all their families need is bread, potatoes and pork. Tell your wives I have a fruit canner which I think ought to be on every farm. It is a very simple affair. Sterilizes the fruit and keeps it well. The fruit canned with it brings a better price. When you have a surplus of fruit it can be disposed of at pleasure. I

am very much interested in farm life and am endeavoring to make it a healthier, happier and better place for us all. (Applause.)

THE STRAWBERRY.

J. R. Reasoner, Ogden.

The horticulture of a nation is one of the factors in the solution of the problem of a higher civilization. It will not be seriously questioned, that the food of a nation has much to do with its intellectual and moral character. The carnivorous animals are usually the most vicious, we believe that if a fair test could be made, that it would be found that where the largest amounts of fruits are consumed, (other things being equal,) that there is a lesser amount of drunkness. In the berry kingdom the strawberry appears to be recognized as the Queen, and with but little probability of being dethroned in the near future. It is quite certain that it is receiving more attention than ever before. The consumption of this fruit in the United States is becoming enormous. A short time ago it was a luxury—within the reach of the few—it is now an essential with the masses. It is here to stay. There is not much danger of an over production. Our people have within a few years learned to eat them. An increased supply will be a stimulant to a greater demand. One of the inquiries is for the most desirable varieties and the best methods of cultivation. The probabilities are that there never can be a single variety that will be the ideal for all purposes, no more than in the apple family. The finest berries for the table, having a fine, rich flavor, sweet and juicy—are not likely to have the best shipping qualities. It may be observed that the best shippers are usually firm, having a large calyx, the seeds standing out prominently, and serving as a protection. The variety known as "Shuckless" may be excellent for home use, where little handling is required, but they are poor berries for the market. If we could produce a seedless variety it would probably create a sensation, but it would not probably bear much handling. For the reasons aboved named, and perhaps others, some berries which are delicious, will not bear handling and shipping. Some of them are lacking in life, shape, color, etc.

Regardless of intrinsic excellence, the public eye is captivated with the red. Some of the best apples, such as Baldwin, Jonathan, Winesap, etc. are red. Some of the poorest are red. When the market is supplied with the Ben Davis,

the Rhode Island Greenings will go begging. The same rule holds good in the strawberry market. We raise the Rhode Island Greening for its fine, rich flavor, but we raise the Ben Davis to sell. We may look for a change on this line. I suppose that the thing most desired is a good all-round berry, combining in fair proportions the most excellent qualities, viz., vigorous plants, good bearers, good size, color, etc., and good shipping qualities. Something that will fill the producers boxes and his purse. In the culture and improvement of the strawberry, as in other fruits, we have a broad and inviting field. The results in the next quarter of a century will probably be as great or greater than that of the past. But how is this to be done? The answer may be.

First—By making selections of the healthiest plants, having the greatest number of well formed berries and other desirable qualities; placing them in beds to themselves, and propagating from them. One or two years may not make perceptible difference, but careful selections for ten years will show decided results.

Second—By hybridizing and producing from the seed. If proper care is taken in the selection of berries for seed, probably one or two plants in every 100 will show some good quality. There my be one in each 500 that will have some decided merit and be worthy of presentation to our Horticultural Society for testing and naming. Out of every fifty millions of children that are born, there may be a Clay, Sumner or Webster. Perhaps, if the same care should be taken in the selection and culture as is given by the careful, scientific horticulturist, the proportion would be much greater.

It is folly to introduce to the public a new berry, unless it be thoroughly tested, and proven to have some superior quality. It is generally understood that the pistillates or plants having imperfect flowers, will not be productive unless contiguous to the staminate or plant with a perfect flower. Not more than two rows of pistilate varieties should be planted to one staminate. Our theory is, that staminates may not always fertilize themselves. Some accident may happen to the pollen of one variety, whilst another may escape. The best results have always been secured with us, when we have mixed the varieties, sometimes fifteen to twenty varieties on less than five rods of ground, the same in some of its features applies to other fruits, such as apples, pears, etc. Many partial failures came from the fact that the plants have been taken from an old bed, where the poorest berries have rotted upon the ground, from which have come many

worthless seedlings. It is always safer to procure the plants from the propagator who does not allow the plants to fruit, and who in filling orders takes the entire crop of plants which were produced the previous season. From our own experience we cannot recommend summer or fall planting. There is to much danger of loosing the plants by the drouth, which usually comes at some time during the season. One of the obstacles, which makes a large crop of berries uncertain in this region, is the drouth, frequently when the berries are forming, and the plant needs the most moisture, this can probably be largely overcome by sub-soiling and either surface, or sub-irrigation. After the berries have been raised, we are liable in this region to meet with another difficulty, viz: At the beginning of the berry harvest, when the berries are large and plentiful, we have no trouble to secure pickers, but as the season advances, and the picking is not so good, and the pickers have made some spending money, they begin to desert when you most need them. Certainly some uniform rules should be adopted by the producers for their protection; I am not able to say what they should be.

DISCUSSION.

THE PRESIDENT—Don't you think, in the black raspberries, they would necessarily have to be carefully planted down in a furrow and, as the plant rises, fill up to it, and in that way get the roots down deeper and have more moisture?

MR. REASONER—I have had but very little experience with raspberries, but I should think that would be true. But I am becoming more and more in favor of sub-soiling. If we can sub-soil and keep the ground pulverized on top with surface cultivation, however dry it may be, you will preserve the moisture.

RASPBERRIES.

FRED HUBBARD, Urbana.

Our experience has been for local market and neighboring towns only. In raising berries we consider what they will be worth when they reach the table and not what money there is in it, knowing the price and sale will take care of themselves if we raise the best fruit. It pays to do

our best—if we enrich and cultivate it costs more, but we get fruit that will hold a trade and are fully compensated. Yet much time should be spent in selecting varieties which will be profitable as well as palatable. We are fortunate in having Secretary Dunlap and the experiment stations so near us.

We raise the Gregg for blackcap with some Kansas and Palmer for early, the Turner for red and a very few Shaeffer's Colossal for special, although these do not stand the winter, while the Snyder is almost our only blackberry.

The ground must be rich and well drained. We prefer old land, if it is rich, plowed early. We perpare the ground for berries as we do for corn, but more carefully, sub-soiling behind the plow and leveling well. We raise our own plants. The row should be manured about once in three years and this is very useful in obtaining good raspberry plants, as they root better in loose ground or under a mulch. They should be set in the spring, three feet apart in the row, with rows eight feet apart. We use a line and spade in setting for much hoeing can be saved by setting straight and cultivating close. The red raspberries and blackberries we set deep and trim the top down to about six inches from the ground. We are more particular with the black raspberries, firming down well and covering the finger marks by a rake of the hand to prevent baking, the roots should be spread to get dirt under the center, and the crown should be just covered. They should be handled carefully and kept moist, for a dry wind will soon kill them.

When the setting is done the ground should be rolled at once and the marks loosened with a Breed's weeder. We plant a row of sweet corn in each place the first year, although this costs about all it comes to. We trim and thin our berries to a narrow row and then cultivate shallow and close, using Planet, Jr., with five sweeps. They should be cultivated at least once a week if the weather permits, beginning quite early in the spring and continuing for a short time after the fruit is gathered, according to the weather. If frequent rains occur in August and September they should be plowed after each rain, when not too wet. Unless the dirt will crumble well in your hand it is not best to plow. The berries seem to be earlier if well cultivated. If the ground becomes baked through packing in a wet time, break up the crust with a light plow like a subsoil plow, yet made to run only four or five inches deep. An ordinary subsoil plow, though it can be run shallow, is too heavy to handle. If

the canes are inclined to blow down, wire the row up. Set posts in the row with cross pieces for each, to which attach the two wires, one on each side.

The trimming is also important. We keep the blackberries very thin but let the row stand nearly four feet high. We do not trim the raspberries, except to nip them, until spring when the leaves start, so that we can see where to cut, and then trim close. We do less nipping than we used to and have better results. The suckers should be kept out and the old canes removed as soon as the picking is done, before the laterals get long enough to bother. I think disease is carried out with the canes which would go to the new growth if left standing till spring. It is hard removing them in the fall with the long laterals in the way and the raspberries die back badly if trimmed before spring. To remove brush we have a low one-horse wagon with wheels under the box. Berries do not need to be removed often if kept well cultivated and enriched, but we cannot take two hundred crates of blackberries from an acre many years in succession without enriching.

In picking we use Illinois quart boxes set in a light tray holding four boxes. We have a moveable tally house at the end of the patch to which the tray-fulls are taken. When a crate is filled it is taken to the berry-house ready for market. Berries picked before 2 p. m. should be marketed that day, though with a good berry-house they can be kept till the next day, especially in the first of the season. We go over the patch every two days except in the heaviest picking, when we go over it every day except Sunday, if we can. We make our boxes with an Ede box-machine. In horticulture we are drawn near to our Maker for we cannot succeed unless we carefully study and obey His laws. The same ground produces raspberries or blackberries as we choose. We can work hard and gain splendid fruit, or work little and have dried up fruit. The fruit is better than the bloom and the same is true of the fruit of our lives. We may truly say that berries are made and beautified by Him who doeth all things well.

DISCUSSION.

MR. WALLACE—I would like to ask if any one has tried setting black raspberries in the spring, after they have commenced to grow? The best success I have ever had was to wait until the plants were nearly one foot high, and get my ground

thoroughly pulverized and then lay off my rows with a plow, and take a wagon and go to the field and dig those plants up with a fork or hook and set them in a wagon, leaving on them a good deal of dirt; haul them to the field where I want them, and live hands can set out faster than any other way I ever tried. Throw the dirt around the roots and tramp it down, and their growth will hardly be checked unless the weather is very dry. I have tried every plan I could think of, but that succeeds better than any other I have tried. In this matter, I have only reference to black caps.

MR. HUBBARD—I have tried that plan, but the greatest objection to it is, you are apt to get two or three plants in one place, and they will never fruit as well as if they are divided up and one planted in a place.

MR. RIEHL—Where you have young plants on your own ground and want to make a new plantation, year by year, that is an ideal plan of planting black cap raspberry bushes. I have used it. They make a better growth; not only that, but we are sure of getting a full stand. If you plant the tops in the spring before they are started, you are apt to have a great many miss. In following this plan, you almost entirely avoid that.

MR. H. L. DOAN—We have practiced taking them up as soon as sprouted, and that seems to be the most successful way with us.

THE CHAIRMAN—There is quite an advantage in doing it that way; you get them in deeper. One fault we have is, in getting them too near the surface. I think by getting them deeper you get better results.

MR. REED—I have been considerably interested in getting a good stand of blackberries. It is something I have never been able to do. I don't know that I ever heard this method recommended before, and I shall go home and try it. I am sure I have got one thought from this meeting, at least, that will be of value to me.

MR. WALLACE—By planting them that way, you get them deeper in the ground and the roots spread out and are not affected by the frost.

MR. HUBBARD—My caution would be, not to get more than one plant in a place. If you get two or three of those plants in one place it will grow too many suckers, and you will have to thin them out. If you take a knife and go through them and thin them out, all but one plant in a place, you will get better results.

Now, another matter. I would like to ask how late to cultivate berries in order to have them to winter in good shape?

MR. H. L. DOAN—We cultivate our fruit plantation as late as we can. We don't like to cultivate too late in the fall. It causes them to make too much growth and they winter kill.

On our younger plantations we keep cultivating during the whole season. Cultivate after every shower to keep the ground in good condition. And the dryer it is the oftener we cultivate.

MR. RIEHL—I cultivate as long as is necessary; as long as a weed will grow. When it gets so late that a weed will not make any headway before fall then I stop cultivating. That is what I do at home. I cannot say what I would do in a different location, on different soil.

MR. REASONER—I would ask which is preferable in an old orchard, clover or cultivation?

PROF. BURRILL—I would say cultivate it.

THE CHAIRMAN—Mr. Winn, what would you do with it?

MR. WINN—That depends upon the trees. I have an orchard it would be a hard matter to cultivate in. It would be difficult to haul a wagon through.

PROF. BURRILL—How much clover can you grow in such a place?

MR. WINN—Not very much. I would cut the grass and mulch under the trees.

MR. SPENCER—I have a young orchard of apple trees for family use. If there are any apple tree borers I can't find them there; but it don't seem to me the trees are doing as well as they should, and yet they are cultivated all through

the season—well cultivated. I would like some one to tell me what those things look like and how they affect the trees when present.

THE CHAIRMAN—Prof. Burrill, can you answer Mr. Spencer's question?

PROF. BURRILL—There are two kinds of apple tree borers—the flat head and the round head. The round-headed borer is liable to get in the tree near the ground and in the forks of the branches. Each borer is known well enough from its manner of operation—by the sawdust which it throws out of its hole. If you look down the base of a tree you will notice a little pile of sawdust that the worm has thrown out. That borer in some localities is very disastrous. Usually very little trouble is caused by it on black prairie soil.

The flat-headed borer is very destructive in all this region. However, it is by no means so likely to get into trees that are in good, thrifty condition as the other. They come the first year after the trees are transplanted and are not doing very well—not only in apple trees but all other trees. Most anything that causes a check in the growth of the tree is an invitation to the flat-headed borer.

These beetles lay their eggs the last of May, or first of June here, and not before. The young hatch out and penetrate the bark and mature that same year. They imbed themselves deep in the wood, where they stay over winter, and come out the next year in time to repeat this operation.

What we should do is to destroy the egg, so the insects will not penetrate the bark and get into the body of the tree. They are rather easily kept out by the use of alkaline washes, some mixture of lime, or a strong solution of concentrated potash. It is remarkable how strong a dose of that kind of wash a tree will stand and come out all the brighter for it. Mix up a solution of that material stronger than we used to use for soft soap. If soft soap can be had use that. Put it on a tree with a swab. Coat them well with it. Do that in June, then in a week or ten days after, and then a third time. That will be still better. After that there is little likelihood of any trouble from that source.

Trees so treated have an outer bark, smooth and dry. No moss grows upon them, no old, rough dying bark, no roughness of any kind. They look bright and clean, and those insects cannot get in.

After they have gained admission take the time, use a flat-bladed knife and dig it out. In the early part of the year it does not get deep in the wood. It makes a little circuitous road inside the bark and outside the wood, and you can easily dig that away. If you see sawdust about the tree you may be sure the flat-headed borer is there.

The committee to whom was referred the President's address and Treasurer's report submitted the following report, which was adopted:

COMMITTEE REPORTS.

Your committee to whom was referred the treasurer's report and the president's address and the secretary's report would report that having examined the treasurer's books and the vouchers received find the same correct except the matter of one voucher, which has been mislaid, but which he will file with those already at hand. The president's address we commend to the careful perusal of all our members, believing they will find the points there noted of great importance to all. We also commend to our readers that portion of the secretary's report referring to the storage and sale of their apples and other fruit.

Signed. GEO. J. FOSTER,
C. G. WINN,
MRS. H. M. DUNLAP.

The committee on final resolutions presented the following report, which was adopted:

Your committee on final resolution beg to submit the following report:

Resolved, That the sincere thanks of this society be extended to the professors of the University of Illinois who have so ably and courteously assisted us with papers and in the discussions.

That we are much indebted to our retiring officers for their energetic and untiring efforts for the success of our society.

Respectfully,
G. M. AUGUSTINE,
E. H. RIEHL.

Chairman Augustine—Ladies and gentlemen, the time has come for us to adjourn. I am very grateful to you for the courtesies you have shown me in my attempt to preside over your meetings during this convention. I feel we have had a very profitable time. We have had excellent papers and discussions. The report of our meetings will be printed and you will enjoy reading them. There being no further business for us to do this meeting will now stand adjourned.

LIST OF

OFFICERS AND PROCEEDINGS

OF THE

LOCAL HORTICULTURAL SOCIETIES

REPORTED BY THE SECRETARIES

1897.

PROCEEDINGS

OF THE

ALTON HORTICULTURAL SOCIETY

FOR 1897.

REPORTED BY HELEN RIEHL.

OFFICERS.

PRESIDENT.....H. G. McPILE.
FIRST VICE PRESIDENT.....WM. ARMSTRONG.
SECOND VICE PRESIDENT.....E. SIMMS.
SECRETARY.....MISS HELEN RIEHL
TREASURER.....F. HOFFMEISTER.

STANDING COMMITTEES.

On Orchards—E. H. Riehl.
On Small Fruit—Wm. Jackson.
On Vineyards—H. G. McPike.
On Culinary Vegetables—E. Simms.
On Ornamental Planting—John M. Pearson.

FEBRUARY MEETING.

These unpleasant days we are having occasionally would be well spent by making some neat labels to put on the young trees you have been planting. These are best made of red cedar. Make them large enough that you can write plainly the name of variety and also the name of the firm from which you got the tree, so that in case varieties do not prove true you will know where to go to find out what you have, or if worthless, be able at least to give the dishonest or careless party the annoyance of telling him what he has done for you, and by giving him a little free advertising among your friends. Of course you all have your record books, but you will find it very convenient to have labels also.

A little about pruning would be in order here, but it would make this report too long and will therefore be postponed until next meeting, meanwhile every pleasaut day should find us in the orchard armed with pruning shears and making good use of them, especially among the peach trees.

Respectfully submitted,

E. H. RIEHL.

DISCUSSION.

MR. JACKSON—Mr. Riehl does not say whether the peach crop is as good elsewhere as it is with him. I think the river may have helped to preserve his fruit.

MR. PEARSON—I don't think as small a body of water as the Mississippi river can have an effect on fruit, it is more likely the elevation that has saved Mr. Riehl's peaches. Buds twenty feet in the air are often good while those near the ground are killed.

MR. RIEHL—I think our fruit is safer being near the water.

MR. MCPIKE—White peaches with us have a good crop; yellow are not so good.

MR. PEARSON—Would it pay to thin peaches on last year's prices?

MR. RIEHL—I have never yet thinned but what it paid.

MR. DAVIS—I thinned some last year. It cost me 20 cents a tree and I saw no difference in the size of the fruit.

MR. MCPIKE—I find great profit in thinning my trees.

MR. RIEHL—We should thin by all means; we will have better fruit and it will bring better prices.

MR. JACKSON—What time do you prune?

MR. RIEHL—As soon as you see that you have a crop.

MR. JACKSON—I have heard that the best time to prune is just after the leaves begin to show.

MARCH MEETING.

The March meeting was held at the residence of Hon. John M. Pearson.

REPORT ON ORCHARD FRUITS.

Mr. President:

I suppose about the first thing you want to know is the condition of the fruit buds. Your committee finds, upon careful examination, that all fruits excepting the peach are perfectly sound. About one-half of the peach buds are killed which would leave more than enough for a crop were they equally distributed on all trees. This, however, is not the case, some varieties being almost perfectly sound, while others have but very few live buds. It has been the obsevation of your committee that tender varieties were unusually shy bearers, having but a limited supply of fruit buds at any time, and also that the large blossomed varieties are the hardiest.

Prospects for a paying apple crop were never better than at present. Last year saw the largest crop this country has ever produced, which will naturally result that there will be no general crop this year. This means that we, and those in the few other sections where there were no apples last year, and it will certainly pay us to give our orchards the best attention with a view to have our fruit as near perfection as possible.

Our little crawling and flying enemies no doubt have much work in store for us again this year, since last year was a very favorable one for their propagation, though it is evident that the changing weather we have been having this winter was unfavorable for their health as well as for ours—the warm, sunny days causing them to crawl out and expose themselves, to be destroyed by a sudden fall of the tempera-

ture or a cold rain. Let us prepare to meet these miserable little pests as soon as they make their appearance in the spring and make it as unpleasant for them as possible.

VINEYARDS.

MR. M'PIKE—Never prune the grapevine with a grubbing hoe, for such action would be a waste of time and force. If you have in your vineyard vines that are of no value as they are, graft them and in the year following have a crop of your favorite varieties.

MR. PEARSON—How many bugs does your scion contain, and how many canes does one bug produce?

MR. M'PIKE—Ordinarily one bud is sufficient, but when the graft is deep it is necessary to use a long scion, which may contain several buds, in order to have the top bud near the surface. One bud sometimes sends three or more canes.

MR. PEARSON—How many vines can the average man graft a day?

MR. RIEHL—About fifty.

MR. PEARSON—Would it not pay better to grub out the old vines and plant new ones, considering the vines can be bought very cheaply and that many of the grafts may not grow?

MR. RIEHL—This, of course, depends on circumstances. If you do the grafting yourself and are well experienced you will loose but a small per cent. of grafts, and under such circumstances it will certainly pay. On the other hand, if you have some one to do the work whose reputation you are not familiar with, it may turn out to be a poor investment. The same may be said of vines, but if you grow them yourself you need lose none of them, while if you send to a nursery for them you may lose many interesting new varieties. I sometimes find it practical to put two varieties on one vine, so that in case one proves of no virtue it can be removed and the vine still remain in good shape. There are three new grapes on the market that are universally praised and recommended and I think it would be well for some of

the members of this society to get them that we may see if they are suited to this locality. They are Campbell's Early, Alike and Nectar.

APRIL MEETING.

The April meeting was held at the residence of Mr. N. Challacombe. The committee on orchards reported:

ORCHARDS.

Mr. President—There are but few changes to be made in last month's report in regard to the outlook of a fruit crop. Most varieties of peaches are now in bloom and show blossoms enough for three-fourths of a crop. All varieties of plums are perfectly white with blossoms. Pears, with a few exceptions, promise well, and if nothing happens the Kieffer will require considerable thinning. Apples promise a full crop.

Mr. Hoffmeister—The prospects for a general fruit crop is good.

Mr. M'Pike—With me all yellow peaches will be scarce, while the white peaches will have a fair crop except the Old Mixon which will have but one-fourth crop.

Mr. Hollard—The prospects for fruit is good all but peaches. All my trees will have little fruit except Chinese Cling and Elberta, which will have about one-fourth crop.

Mr. Riggs—All my trees but the Early York have plenty buds. Apples are full of buds. All other fruits are in good condition except the black raspberry.

Mr. M'Pike—Mr. Collet says that the Kieffer pear is very poor if left to ripen on the tree, and that it is much improved if picked and left to ripen in barrels. I should like to know if others have it so.

Mr. Riehl—We have always found that the Kieffer is very inferior if left to ripen in the sun. When picked before they are ripe and kept in a dark cool place they are almost as good as the Bartlett.

Mr. Challacombe—When do you pick them?

Mr. Riehl—As soon as they begin to color.

VINEYARDS.

Mr. Riehl showed a very fine vine of the Hopkins grape illustrating his method of grafting.

Mr. McPike—The prospect for grapes is fine and if we have no late frosts there will be a good crop. We are all indebted to Mr. Riehl for bringing his vine. The illustration is a fine one.

Mr. Hollard—I have some grapes I would like to graft; can I do it yet?

Mr. Riehl—I have cut scions from a vine after the leaves were opening and it grew.

Mr. Hollard—Had you a young vine?

Mr. Riehl—Several years old. Five or six years old is preferred.

Mr. McPike—Do you propose to spray?

Mr. Riehl—We must spray in this vicinity if we want grapes.

Mr. McPike—Will you spray before the leaves open?

Mr. Riehl—It should be done now before the leaves open; once after they are open, and again after the blooms are gone.

Mr. McPike—The blue beetle is very destructive in the vineyard when in great numbers and should be carefully watched.

MAY MEETING.

The may meeting was held at the residence of E. A. Riehl.

The committee on orchards made the following report:

ORCHARD FRUITS.

Mr. President:

Not having been able to visit the various orchards in the surrounding neighborhood your committee must confine this report to the home grounds. There are several changes to be made in the report of last month regarding fruit prospects, some of which are not very pleasant to report.

It is too early to pass any definite opinion in reference to apples and quinces, but it is reasonable to suppose that

there will be a crop since they bloomed very full and the weather is very favorable for setting fruit. The Kieffer is the only pear that promises a crop and they will need but little, if any, thinning. Although cherries bloomed very abundantly, there are but few varieties that have set any fruit to speak of. It would not be safe to estimate peaches, at more than a half crop. Plums have set very full.

VINEYARDS.

MR. MCPIKE—I noticed in this place to-day a fine selection of the best grapes that have been produced. If our vineyards have been properly cared for in every possible way up to this time, that which is now of most importance is to keep the vines properly pinched. Of course, on a trellis or arbor you would proceed differently than where they have but the stake for support, as you would then want to extend your vines. Do not cut the new growth just beyond the last bunch you wish to retain, but leave a leaf or two beyond that. You must always leave plenty of leaves to insure proper ripening of the fruit. I believe in close pinching and I started two weeks ago taking off the tips from shoots that were in advance of the rest. We ought to get through with pinching as early in June as possible.

MR. VAN HORNE—Do you advise sacking grapes?

MR. MCPIKE—Not on a large scale, as it is too much work; but they ripen nicely and are a little later when bagged. It pays to bag certain varieties. They ripen slower, and therefore can be kept longer when thus protected.

MR. COOK—Last year I cut my vines very closely; they made a second growth and bore some fruit. I notice this year, they are nearly all dead.

MR. MCPIKE—You can't do violence to the grape. When your vines fruit, on the second growth, they are bearing your next year's crop.

MR. RIEHL—I think when we can buy grapes, grown six hundred miles away, at two and a half cents per pound, we can't do as much pinching and take so much trouble with ours.

MR. MCPIKE—If you have three bunches on a branch it makes big berries, and every leaf you leave is a benefit.

MR. BROWNE—I pinch to control, and keep near the centre (mine grow on a trellis), more than to produce large berries. I have about 400 Worden and Concord vines, from which I picked, in '92, twelve hundred and sixty baskets of fruit; that was about three baskets to the vine. I could get eight bunches into a ten-pound basket.

MR. RIEHL—Pinching is not thinning, the one has nothing to do with the other.

MR. PEARSON—I don't see how we can make money with grapes, selling at one cent per pound.

MR. RIEHL—We must market ours before those cheap grapes come in. We can get four cents per pound if we have them early.

MR. PEARSON—The Ives is not fit to eat, and it spoils the market for better grapes.

MR. RIEHL—The Ives is "played out," and so are its growers, in Southern Illinois. They have thousands of them there, and now Georgia has good ripe Concords before the Ives is ready for market.

JUNE MEETING.

The June meeting was held at the residence of Mr. H. G. McPike.

Committee on orchards reported as follows:

ORCHARD FRUITS.

MR. RIEHL—I have noticed on our place some varieties of apples, which have never borne full, are fruiting well this year. Pears are about a half crop, peaches the same; quinces are very good and plums are full. Some of the finer varieties, such as Japanese, were so full that after we took off three-fourths of them there were enough left. I allowed for the work of the curculio. It is a pity that members of this society have not each a few of these trees. Cherries are a failure with us.

MR. PEARSON—I shall not have a crop of apples; there will not be ten per cent. of what I had two years ago. There are a few of Yellow Belleflower, Rambo, Sweet Bough, Newtown Pippin are about a half crop, also Jonathan; the Janet is almost a failure; Ben Davis is very good. Altogether, we may count on a half crop of apples. My pears are poorly set.

MR. RIGGS—My yellow peaches are about one-half crop; there are plenty on the white varieties.

MR. JACKSON—With me, peaches are a good crop but pears have few on the trees. I have the Walcott apple, which is a very good bearer, and has somewhat the flavor of the Janet.

MR. MCPIKE—It is interesting to note the difference which location and exposure has on the fruits. My Old Mixon are very fine; Smock is full. I expect a half crop of peaches. Pears are limited. Winter Nellis is almost a failure. Quinces are very full. Apples only fair.

SMALL FRUITS.

MR. JACKSON—I have tested some new varieties of strawberries and will give you the results of my experiment as follows:

Mr. President:

Under the present conditions of the strawberry crop it would be very difficult to make a satisfactory report; besides conditions vary so much this season in different sections, that what might be true of one place would be widely different in others. I shall therefore simply describe the different varieties and let each grower express his own opinion as far as other matters are concerned. The following kinds are on exhibition:

Lover—Sour, small, apt to overbear; not desirable.

Haverland—Good size, even on old plants; rather soft, prolific.

Bubach—Very large on my ground; fair quality, reasonably prolific.

Jersey Queen—One of my best kinds; good size, fine appearance and of very good quality.

Beverly—Of fair size, good quality, ripens rather unevenly; a good fertilizer.

Williams—Very small; not worth planting.

Downing—A good quality but have much better kinds for market, small: shall discard it.

Bessie—No good.

Crescent—No good.

Parker Earle—Too light colored; calyx too large, causing the fruit to shrink and leave the box short in measure.

Wolverton—Fairly good: worth planting.

Saunders—Very good; late, of fair size and productiveness.

Annie Forrest—A good berry but not productive enough.

Gandy—A very good late berry, just beginning to ripen now.

Jessie—Fairly productive and of good size and one of the best for fertilizing purposes.

Princess—While not very large comparatively, it is of fair size, regular and very prolific.

Barton's Eclipse—In some places very good and a fair cropper.

Middlefield—A very fine berry, but not productive enough for general cultivation.

Enhance—Not desirable.

Marshall—I doubt if it is as good as it has been represented.

Brandywine—Would wish to test it longer before giving an opinion.

Wm. Belt—Has produced some very fine berries and may do better next year.

Ocean City—A very fine prolific berry. This and the following kinds are new.

Pride of Cumberland—Very promising.

Clyde—This berry came to me very strongly recommended, and as far as I have seen it, it is very promising.

No. 1000—A very good berry and has heavy foliage. The fruit stalks stand well up off the ground.

DISCUSSION.

MR. RIEHL—Williams has always been a paying berry with us.

MR. PEARSON—I would like to hear from men who have grown the Ruby what was their experience.

MR. BROWNE—I have grown it about three years, and it is about the best of all berries I ever saw. I grow nothing

but Ruby and Williams which do well with me. I never failed to have a large crop of fine berries. Last year the bed was neglected. I just ran the mower over it and left the weeds lie where they fell. This year I had a very fine crop on it.

Mr. Jackson—My Brandywine is almost too full. I have discarded Bederwood and Annie Laurie.

Mr. Pearson—A man can gain more practical knowledge from seeing the berries on the table here to-day than from any amount of reading.

REPORT ON STRAWBERRY EXHIBIT.

Mr. President:

Your committee on fruits respectfully report the following awards:

For best collection of strawberries—First premium, E. H. Riehl, forty-one varieties; second, Wm. Jackson, twenty-three varieties.

For best quart largest berries, E. H. Riehl, on Ruby.

For best quart, quality considered, Wm. Jackson, on Jessie.

For best quart Bubach, Wm. Hyndman.

For best quart Brandywine, Wm. Jackson.

For best Cumberland Triumph, Jos. Ebbert.

For best quart Warfield, E. H. Riehl.

For best quart Jersey Queen, Wm. Jackson.

For best market berry, E. H. Riehl, on Ruby.

For best family berry, E. H. Riehl, on Ruby.

Best new variety, E. H. Riehl, on Glen Mary.

The collection of cherries was very small, but Mr. E. Hollard showed a quart of fine Governor Wood.

John M. Pearson,
J. S. Browne,
F. Hoffmeister,
Committee.

JULY MEETING.

The July meeting was held at the residence of Mr. Wm. Hyndman.

The society met on the 10th of July at the home of Mr. Wm. Hyndman, of Godfrey, President M'Pike in the chair. Minutes approved as read.

ORCHARD FRUITS.

MR. JACKSON—Mr. Armstrong reports the Yellow Jackson seedlings as being overloaded and being pretty highly flavored; thinks it would be a good thing when other peaches have been frozen.

MR. HYNDMAN—I have about half a crop of Pippin and Winesap, and a full crop of Bartlett pears.

MR. JACKSON—My Flemish Beauty are well fruited; Seckel are about half crop. There is more twig blight on my place than I ever saw before. I attribute it to the work of some insect.

MR. PEARSON—I made inquiries concerning that some years ago, and was informed that insects did it. It is, however, not a great evil, since like pruning, it has never been known to kill the trees.

MR. DRAPER—Would you remove the blighted twigs?

MR. JACKSON—No; they fall of.

MR. M'PIKE—Are we certain what crop we will have with apples under the present conditions?

MR. PEARSON—"Heaven from all creatures hides the book of fate." When we have no blossoms we know there will be no fruit, but we had an abundance of bloom this year but the set was small in proportion—in this section half a crop is equal to a full crop, and quite as good for us, as the profits are then higher.

MR. M'PIKE—My apples are coming forward very much better than I expected. Newtown Pippins are well loaded, Janets full. There are barrels full of Red June and Early Harvest on the ground. I had no apples last year, and now they are full. My plums are almost a failure and peaches a half crop. Pippin has been an alternate bearer with me. It is now well distributed over the tree.

MR. HYNDMAN—Mine are all over the tree.

SMALL FRUITS.

MR. JACKSON—I have had a very good quality of fruit and got fairly good prices for it. It has been supposed that

wet weather is favorable to rot, and strange to say, this year I have very little of it. Whatever I say at these meetings refers to conditions on my own place only.

MR. HYNDMAN—The Kittatinny blackberry has been pretty badly rusted this year with us.

Mr. Jackson showed a sample of the Minnewaska blackberry, a late bearer, the twig being loaded with large green berries, a few just turning red.

MR. JACKSON—I had only a few raspberries and I believe it was fortunate to me that it was so. Of red raspberries I could not get enough for the demand, and I shall plant more.

MR. HYNDMAN—I never saw a better year for strawberries.

VEGETABLES.

MR. SIMS—This has been a very poor season for beans; the blossoms dried up and fell off, or they would not bloom at all.

MR. BROWNE—I planted beans three times and have not succeeded in getting any yet. A good way to make beans come up is to split the end of the beans with a small-point knife and then put them in a can of moist, warm earth and let it stand in a warm place in the kitchen for a few days and plant them out when they begin to sprout. Beans planted so will be half way up the pole when those planted in the ordinary way are just sprouting. I soak all garden seed in hot water before I plant them; in this way I get ahead of the weeds, too, having a good start—they outgrow the weeds. When my seeds have been warmed and moistened for a week or two I just take dirt—which is not muddy, but just damp—and seeds and all and sow it in rows by hand. If I want to plant a large field by drill I should proceed in the same way, only I'd plant before seeds began to sprout. I treated my asparagus seed that way and a week later it was up nicely.

MR. JACKSON—I sowed asparagus and radish together, and picking out radish as they grew made room for the little plants.

AUGUST MEETING.

The August meeting was held at the residence of Mr. E. Hollard.

ORCHARD FRUITS.

Mr. President:

Your committee is now satisfied that the apple crop in this vicinity will be a good one. There are trees of about fifty varieties on our place that are old enough to bear, and of these there are but ten that do not show a crop. Ever Pryor's Red and other kinds that are shy bearers are full.

Pears are almost a failure. White Doyenne shows more fruit with us than any other variety. There seems to be very little blight this year, and thus the trees having had a year's rest will be in excellent shape for a crop next year.

Peaches will not amount to much. Many varieties that promised a crop two months ago show very little fruit now. Thurbur, Elberta, Hyslop and Chinese Cling are about all out of over fifty kinds that are now carrying a crop.

We fruited the Sneed this year. It is one of the very earliest; good enough to be recommended for trial.

Our Japan plums gave us a full crop this year, and I feel sure that a few trees of this excellent fruit would add much to the value of every family orchard.

Your committee recommends sowing orchards to cow peas. It produces more growth and gives better results in general than any other mode of cultivation.

Respectfully submitted,

EDWIN H. RIEHL.

DISCUSSION.

MR. JACKSON—Is not the Sneed peach a partial cling?

MR. RIEHL—Very slightly so.

MR. COOK—Is the cow bean good to shade the ground?

MR. RIEHL—Yes; we do not grow it for the crop, but let it remain on the ground till next spring, when it is dry, and then plow it under. It is very beneficial to the soil. If you have a plant every foot apart it is enough, but of course you must sow more seed in order to get that stand.

MR. JACKSON—I had all sorts of seed mixed together, and even added some corn.

MR. PEARSON—The members of this society have at different times recommended pruning fruit trees low and plowing orchards. Now what I want to say is that you can't do both. Low crowns are handy to pick the fruit, but you can't plow under them. I let my trees grow low, then I don't have to cultivate, because the weeds won't grow in the shade and I let my hogs out cultivating which is necessary. Another thing, we know that apple roots feed near the surface and plowing is apt to injure them. We have got to make a choice, either high crowns and cultivating or low trees and none. We can't recommend both at the same time.

MR. MCPIKE—Have you had any experience with the cow bean?

MR. VISSERING—I have used it two years with very beneficial results to the soil. I brought my seed in the south for 90 cents per bushel. They have to be planted here, any time after the frost is over to July 1. I sowed mine in wheat stubble last year with the drill, and the result this year was remarkable. It helped the soil very much as seen in the luxuriant growth of weeds. My wheat was killed in December by the frost.

MR. JACKSON—The feeding roots of apple trees are out from the stem, and when I was in Southern Illinois, fifteen years ago, I noticed in the large orchards they just put the fertilizers away out from the tree. Mr. Riehl, in his report, states that he has very few pears. My Bartlett and Seckel are very good and Flemish Beauty are overloaded.

MR. PEARSON—The matter of blight depends largely on the age of the trees. A pear tree is almost proof against blight after it is ten or fifteen years old. I know trees sixty years old which do not show a sign of blight. I have some thirty years old, which do not show signs of blight. My apple crop is not one-fourth of what it was two years ago.

MR. HYNDMAN—My Duchess and Bartlett are full. I have few White Doyenne, which were full last year. My apples are nearly a full crop.

MR. RIGGS—My apples are nearly as full as they were two years ago.

Mr. Jackson—I have more blight on pear trees planted twenty-five years ago, than on those planted ten years ago. Another orchard planted lately on a terraced side hill, dwarf trees, shows only one bit of blight.

Mr. Hoffmeister—My Duchess and White Doyenne pears are pretty full; outside of that I have hardly any pears. Apples are one-third crop. Peaches thin. My trees are pretty badly blighted this spring, but don't think it will affect the trees.

SMALL FRUITS.

Mr. Jackson—Strawberries at first sold low but later I got $1 to $1.80 per case; currants brought a small price. I inquired about the Jerseyville market for blackberries and the answer was "The woods are full of them." They were sold at a loss this year at 50c a case with the cost of the boxes and picking at 35c.

Mr. Riehl—The Piasa blackberry was so large and fine this year that they sold in Chicago at $1 per case in spite of the glut on the market. We received a telegram from our commission man saying "berries fine, send more."

Mr. Browne—My Piasa fruited so heavily last year that the crop was very light this year in consequence.

Mr. Riehl—I noticed it has a fault of not being able to propagate. It's very hard to get suckers from it.

The Columbian Red raspberry is worthy of trial. It is a rank grower, very productive and has a long ripening early and continuing about a month, it grows from tips.

SEPTEMBER MEETING.

The September meeting was held at the Shurtleff College cumpus in Upper Alton.

ORCHARD FRUITS.

Mr. Riehl—There are many apples in our locality and they will bring good prices; buyers are going around and purchasing the crop on the trees.

MR. FULKERSON—Orchards around Jerseyville are bearing a full crop of apples of superior quality.

MR. MILES—Our apples, for some cause, are falling badly.

MR. HOLLISTER—In the section where I live apples are good and a full crop; peaches are only part of a crop; pears one-third crop; grapes a very large crop.

This meeting was mainly a fruit show. Mr. Riehl showed forty-two varieties grapes, fifteen varieties pears, eighteen varieties peaches. Messrs. McPike, Davis and Hoffmeister showed good collections of grapes, pears and peaches. Mr. McPike showed samples of his new seedling grapes. McPike. They were fine, large in bunch and berry of very good quality.

OCTOBER MEETING.

The October meeting was held at the residence of Capt. E. Hollister in St. Louis county, one of our old-time members, who has moved to the vicinity of the "Future Great."

ORCHARD FRUITS.

MR. JACKSON—There is a good deal of complaint in our locality of apples dropping. My boy found that the fallen fruit was all injured by insects. We fed them to the hogs to prevent the spread of the insects.

MR. PEARSON—What apples can we raise for profit?

MR. HOLLISTER—The best for early shipment is the Red June. There is more money in that for me than any other early apple. A few large sweets, not many, Porter, Willow Twig, Missouri Pippin, Ben Davis, Winesap, also the Early Harvest, which is pretty good if taken before maturing; but it is apt to overbear, and is therefore small. The Newtown Pippin is good for European shipment. I would not plant the Red Astrachan. They rot in spite of all I can do. The Yellow Belleflower and Red June if grown on low sandy bottom lands are a success.

MR. PEARSON—I grubbed up every tree of Red June I had. They freeze too easily here, and they come just in a busy sea-

son. Early Transparent is a good apple and much superior to the Early Harvest. Buyers want to go to one place and pick 2,000 barrels in one orchard. They don't want to waste time hunting round and doing a hundred barrels here and a few further on. Raise lots or none.

MR. MCPIKE—I noticed the market in Springfield. Jonathan is one if the growers like it. I saw the Early Alexander; it was grown in the northern part of the state and was not as flat as that grown here.

MR. HOLLARD—I have one; they are small and of good quality, but the tree is tender and breaks down. Also it is more subject to insects than other varieties. Still I would plant some Jonathan. Buyers at Chicago always quote prices for them. It depends on the soil, too; black soil is better for them, that gives them a better color.

MR. JACKSON—Walbridge is an apple resembling the Janet; very firm and juicy, but larger.

SMALL FRUITS.

MR. JACKSON—Strawberries are dying in the old beds, and in the new beds they are not making new plants. It will require rain to make them grow or there will be a short crop next year. I have mulched my raspberries as long as I had straw.

MR. MURTFELDT—We have now only about one week for marketing our home grown fruit. They can now send raspberries from California across the Rocky Mountains in four days in their refrigerator cars and have them on our markets, without "beards" on them. Of course that shortens the sale season on the home grown berries.

MR. JACKSON—I marketed my strawberries for a month this year and they never spoiled on me. Of course the last brought a better price than the first. Among the newer strawberries I have tried, Ocean City was one of the best. Gandy is good.

MR. PEARSON—Have you fruited the Ruby?

MR. JACKSON—No, I couldn't afford the price of it.

MR. MURTFELDT—What is it like?

Mr. Pearson—The Ruby was introduced by one of our members, and it is the finest and one of the biggest berries that we have. It has been taking the first prizes for years, right along at our premium meetings.

WARSAW HORTICULTURAL SOCITEY.

OFFICERS FOR 1897.

PRESIDENT ....JAMES T. JOHNSON, Warsaw.
VICE-PRESIDENT.....L. S. DENNIS, Warsaw.
SECRETARY..... ....HOMER D. BROWN, Hamilton.
TREASURER..... .....C. C. HOPPE, Warsaw.

SPRINGFIELD HORTICULTURAL SOCIETY.

OFFICERS.

PRESIDENT.....BERNARD STUVE, Springfield.
VICE-PRESIDENT.....HENRY STANGE.
SECRETARY AND TREASURER..OSCAR WHITCOMB, Farmingdale.

RICHLAND COUNTY HORTICULTURAL SOCIETY.

OFFICERS.

SECRETARY .....GLENN WILSON, Olney.
VICE-PRESIDENT.....G. W. BOWLBY, Olney.
PRESIDENT.....J. L. ZOOK, Olney.

Executive Committee—T. W. Hutchinson, J. F. Jolly, Chas. Man and Charles Lanner.

ANNUAL MEETING.

An attempt was made to get a fruit car placed on passenger trains of the P., D. & E. R. R. to carry fruit. We failed to obtain any concession from the railroad, which is a mistake on the part of the company.

PIKE COUNTY HORTICULTURAL SOCIETY.

OFFICERS.

PRESIDENT.....RICHARD PERRY, Griggsville.
VICE-PRESIDENT.....W. E. CADWELL, Griggsville.
SECRETARY.....C. G. WINN, Griggsville.
TREASURER.....ROBT. ANDERSON.

OBITUARY.

J. B. Morrison, former treasurer, died during the year. He will be sadly missed.

The apple crop of Pike County was a heavy one and the fruit of fine quality, which sold at a high figure. Buyers were here from all parts of the United States. Many orchards will be planted in the county this spring.

MARION COUNTY HORTICULTURAL SOCIETY.

PRESIDENT.....J. W. MURFIN, Vernon.
VICE-PRESIDENT.....SILAS HURD, Odin.
SECRETARY AND TREASURER.....E. G. MENDENHALL, Kinmundy.

FAYETTE COUNTY HORTICULTURAL SOCIETY

OFFICERS.

PRESIDENT.....G. D. STEINHAM, Vandalia.

VICE PRESIDENT.....J. N. LAKIN, Vandalia.

SECRETARY AND TREASURER.....M. J. HARDING, Vandalia.

An excellent and profitable meeting was held February 18, at which the following subjects were discussed:

Plant Life and Its Use—Wm. Fogler.

Apples or Wheat, Which Pays Best—Andy Ray.

Paper on Tree Planting—T. D. Short.

Is Spraying Benefical to Fruit Trees—A. T. Porter, D. S. Scott.

Do Horticultural Societies Pay—J. M. Robinson.

Strawberry Culture—I. L. Clayton.

Culture of Flowers—Mrs. L. Easterday.

There were about forty copies of the Transactions of Illinois State Horticultural Society placed in the hands of worthy fruit men, thus spreading and deffusing in their minds the scientific phase of fruit raising in all of its branches.

We have about thirty members and have lost three of our most devoted members, Jas. Mitchell and Col. Fred Reeman, of Vandalia, and Dr. F. L. Stoddard, of Ramsey, Ills.

CRAWFORD COUNTY FRUIT GROWERS ASSOCIATION.

OFFICERS.

PRESIDENT.....SAMUEL L. BENNETT, Robinson.
VICE-PRESIDENT.....HUGH L. BORELL, Robinson.
TREASURER.....ENOCH E. NEWLIN, Robinson.
SECRETARY.....GEORGE N. PARKER, Robinson.

WABASH COUNTY HORTICULTURAL SOCIETY.

OFFICERS.

PRESIDENT..... .....J. C. UTTER, Mt. Carmel.
VICE-PRESIDENT.....WM. A. ANDERSON, Linn.
SECRETARY-TREASURER...HALLOCK SHEARER, Gard's Point.

ROCK RIVER VALLEY HORTICULTURAL SOCIETY.

OFFICERS.

PRESIDENT.....JOSIAH BUFFET, Dixon.

VICE-PRESIDENT.....D. N. FOSTER.

SECRETARY-TREASURER..... .....MRS. EMMA GROH, Dixon.

SYNOPSIS.

The Rock River Valley Horticultural Society, which was organized last year, has grown to have a membership of twenty-three. During the past year we have held three meetings. March meeting was held at the residence of C. U. Geeting, at Rock Falls, Ill. A paper on potato culture was read by Mr. Dwight Herrick, of Rochelle.

A very interesting and profitable talk was given by Mr. J. S. Hartwell on the way in which clovers, peas, etc, enrich the soil by taking nitrogen from the air, storing it in their tissues as they grow. This talk was followed by a very general discussion of both subjects—green manuring and potato growing.

Mr. Lewis Ulm exhibited ten varieties of very fine potatoes, grown by himself.

June meeting was held at Mr. Josiah Buffet's, Dixon, Ill. This meeting was a strawberry picnic and no program was provided. There was a very good showing of very fine berries. About fifty people were present and a very enjoyable time was had.

September meeting was held at the home of Mr. Chas. Hey, near Rock Falls. The subject for the discussion of the day was "How Shall We Make Fruit Growing Profitable?" The question was not finally settled and is still open for discussion.

The music, provided for the occasion by Mr. Hey and Mr. and Mrs. Baker, of Sterling, was very highly appreciated, as was also a declamation by Miss Estella Birdsall.

KANKAKEE VALLEY HORTICULTURAL SOCIETY.

OFFICERS FOR 1897.

PRESIDENT.....GEO. H. GRAY, Chebanse.
VICE-PRESIDENT.....OWEN L. DAY, Aroma.
SECOND VICE-PRESIDENT.....LEON HAY, Otto.
SECRETARY.....JOHN DEVERE, Kankakee.
TREASURER.....MRS. M. J. BARNARD, Manteno.

INDEX OF CONTENTS.

Illustrations—

Group of Eminent Pioneer Horticulturists, now deceased, frontispiece.
" " " " " living 234
" former members, died during 1897 232
James T. McSpadden, deceased, 1897 225
Pruning of the Peach 61, 62, 63, 64, 65, 66

Annual Address of President, State Society 11
" " " Central Society 410
" " " Northern Society 331
" " " Southern Society 243
Air Drainage in Orchards 5
Apples, Varieties for North Half of Southern Illinois 293
Best Varieties for Market 456
Lists Recommended for Planting xiv
Aldrich, H. A., Paper by 77, 129
Augustine, A. M., Paper by 84, 462
Augustine, H., Resolution by 171
Annual Address by 410
Report by 433
Better Food and Better Methods in Our Homes 143
Blackberries, Paper on 269, 270
Burrill, Prof. T. J., Papers by 26, 436
Bryant, Arthur, Paper, and Report by 229, 174, 2
Bryant, Mrs. A., Paper by 140
Beal, L. N., Papers by 68, 249, 256, 263
Bryant, John H., Sketch, and Picture of 232, 234
Blair, J. C. Papers by 287, 446
Bodman, C. G., Paper by 368
Cool and Cold Storage 7
Cow Peas 22
Co-operative Shipping of Fruits and Vegetables 97
Currants and Gooseberries 399
Constitution and By-Laws, State Society v
Colman, A. F., Made an Honorary Member 128
Calaway, L. H., Paper by 216
Cotta, H. R., Paper by 305

Discussion, Apple Tree Borers 476
Better Food and Better Methods 152
Blackberries 272
Best Varieties of Apples for Market 458
Cultivation of Orchards 82, 466
Co-operative Shipping of Fruits 100
Cow Peas and Soja Beans 420
Cross Fertilization in Orchards 426
Do You Get Larger and More Berries by "Nipping" Back 342
Freight Rates on Pears 245
Fruit Conditions, Northern Illinois 302
First Five Years of an Apple Orchard 430
Grape Growing 277
How Shall We Interest Farmers in Growing Fruit 451
Marketing Fruits and Vegetables 286, 372
Ornamental Trees and Shrubs 50
Potato Culture 77, 352
Protection Against Rabbits 346
Pansies and Pansy Seed 386
Picking and Storing Apples 413
Raspberries in Southern Illinois 266
Revised Fruit Lists 282
Restoring Soil Fertility 418
Raspberries 473
Soil Management of Orchards 31
Small Fruit Culture 72, 381
San Jose Scale 119, 247
Strawberries 253
Spraying 253
Shall Grass Grow in Our Apple Orchards 307
The Nurseryman's Relation to Horticulture 90
The Lincoln Coreless Pear 293
The Strawberry 471
Transplanting Large Trees 387
Trees and How They Affect Us 455
Utilizing Inferior Products of the Orchard 126
Vegetables for the Farmer 325
Work in Experiment Stations, 1897 20
Woman's Life on the Farm 142
Will English Varieties of Gooseberries Grow Here 347
What Is Hybrid and Cross in Fruits 367
Dunlap, Mrs. H. M., Paper, and Remarks by 143, 468
Dunlap, Henry M., Report by 5
Davenport, Prof. Eugene, Paper by 22
Douglass, Robert, Obituary Notice and Picture of 228, 404, 227
Doan, H. L., Paper by 412

Expenditures State Society 2, 10
Executive Board State Society iv
Duties of. vii
Meetings of 181
Experiment Stations, Report of Work in No. 1 184
No. 2. 191
No. 3. 106
No. 4. 197
No 5. 433
No. 7. 201
No. 8. 203
No. 8B 204
No. 9. 209
Plantings in 1897 212
Central Station's Report 433
Summary of Work in 14
New Stations Established 19
Election of Officers, State 162
Southern 280
Northern 468
Central 467
Edwards, Samuel, Sketch and Picture of 230, 934
Endicott G. W., Paper by 274
Fruit, Co-operative Shipping of 97
Future of Southern Illinois Horticulture 291
Fruit Growing *vs.* General Farming 391
Flowers, Does It Pay to Grow 394
Fruits on the Farm 468
Fungicides, Formulas and Directions for xii
Forbes, Prof. S. A., Paper by 105
Fuller, J. W., Paper by 251
Fursman, E. S., Paper by 315
Fish, Mrs. A. W., Paper by 327
Friend, J., Paper by 377
Foster, G. J., Paper by 450
Garden, The Family 216
Grapes, Planting, Pruning and Cultivating 274
Goodrich, T. E., Papers by 11, 267
Galusha, O. B., Sketch and Picticure of 232, 234
Gould, George, Paper by 276
Groh, Mrs. Emma Paper by 319
Horticulture, Status of in I linois 42
Horticulture at the State University 446
Horticulture, How Can Farmers Be Interested 459
Herrick, Dwight, Papers by 74, 301

Hobbs, C. M., Made Honorary Member..... 128
Hartwell, J. L., Papers by. 176, 331, 338, 359
Heaton H. C., Paper by 269
Hubbard, Fred, Paper by..... 471
Illustrations.....Frontispiece, 61, 62, 63, 64, 65, 66, 225, 227, 234
Insecticides, Formulas for Use of..... xi
Johnson F. C., Paper by..... 124
Johnson, Abe C., Paper by..... 270
Johnson, Jas. T., Paper by..... 413
Little, J. T., Sketch and Picture of.....231, 234
Meeting Place, Location of State..... 163
Members, List of, State..... viii
Southern..... 237
Northern 299
Marketing Fruits.....8, 285, 368
Morrill, R., Papers by..... .....56, 168
Made Honorary Member..... 128
McSpadden, Jas. T., Obituary Notice and Picture of..... 224, 225
McCluer, G. W. Paber by..... 178
Mann, Wm. H., Sketch and Picture of.....233, 234
Mendenhall. E. G., Paper and Report by..... .....216. 270, 293
McCaffrey John, Paper by..... 252
Mitchell, J. H , Obituary Resolution on..... 276
Nurserymen, Their Relation to Horticulture..... .. 84
Notes from an Ad-interem Trip..... 462
Nelson, A., Made an Honorary Member..... . 128
Orchards, Soil Management of..... 26
Some Experiments in Cultivating 77
Utilizing Inferior Products of..... 124
Shall Grass Be Allowed to Grow Therein..... 305
The First Five Years of 428
Officers, List of State..... iv
Southern..... 236
Northern..... 298
Central..... 408
Local Societies 479
Ornamental Trees and Shrubs..... 47
Proceedings of State Society..... 1
Southern Society..... 235
Central Society..... 467
Northern Society..... 297
Alton Society..... 481
Pears, The Lincoln and Sudduth..... 9
Peach, Pruning of the..... 56
Premium Awards 67, 158, 283, 390
Potato Culture.. .....74, 347

Pioneers in Illinois Horticulture 229
Peach Growing 276
Pears, Old and New Varieties 294
Prize Essay—Agriculture in Public Schools 335
Potato Scab and Blight, Remedies for 350
Potato Seedlings 351
Pansies and Pansy Seed 383
Pearson J. M. Paper by 47
Phœnix, F. K., Sketch and Picture of 231, 234
Pennington, Dr. L. S., Sketch and Picture of 231, 234
Periam, Jno. Paper by 401
Questions and Answers 93, 342, 366, 387, 413
Report to the Governor II
Report of Delegate to Indiana 129
Ohio 137
Wisconsin 176, 220
Missouri 173
Minnesota 174
Resolutions on the Omaha Exposition 83
Of Sympathy, Samuel Edwards 157
Obituary, State 157
On San Jose Scale 171
Central Society 477
Report of First Vice-President, Southern 247
Second Vice-President, Southern 249
Committee on Pear Rates 251
Ad-interem Committee, Southern 256
Ad-interem Committee, Northern 338
Raspberries 263, 264, 471
Revised Fruits Lists, Southern 281
Central 432
State xiii
Roots, Length of in Soil 341
Results of Plant Variation 401
Riehl, E. A., Papers by 14, 137, 459
Reid, L. H., Paper by 347
Rosette, Mrs. Clinton, Paper by 394
Reasoner, Rev. J. R., Paper by 469
Secretary's Report, State 5
Northern 301
Central 412
Small Fruit Culture 68, 315, 377
San Jose Scale in Illinois 105
Spraying for Insects and Fungii 163, 287, 359
San Jose Scale, Resolutions on 171
Sweet Potato Growing in Mississippi 178

Strawberry, Our Best 251
Seedlings 252
The 469
Small Fruits, Gathering and Marketing 267
Song Birds, Protection of Our 327
Stanton, J. W., Papers, Remarks, and Resolutions by ... 83, 97, 173, 247, 285, 242
Spalding, J. B., Obituary Notice and Picture of 226 227
Simpson, O. B., Paper by 264
Sheridan, Thos. H., Address by 291
Strubler, Phil, Paper by 399
Treasurer's Report, State 2
Southern 246
Central 413
Northern 327
The Tulip Tree 436
Trees, Their Value and Effects 450
Toole, Wm., Paper by 383
Vegetables for the Farmer 319
Voris, Frank D., Paper by 220
Vickers, A. K , Address by 240
Woman's Life on the Farm 140
Williams, F. L., Paper by 42
Whitney, A. R., Obituary Notice and Picture of 223, 227
Webster, Jabez, Papers by 243, 256, 294
Woodard, L., Report by 327
Wilson, Jennie M., Prize Essay by 335
Wyman, B. F., Paper by 391
Winn, Chas. G., Paper by 428
Wallace, J. T., Paper by 456